

TRS-80[®] Microcomputer News

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- Tandy TRS-80 Model 2000
- Getting Started





Fort Worth Scene

January, a time for beginnings. A time for New Year's Resolutions or at least resolutions for the new year. Time to look ahead at what we want to accomplish, at how we want to change and grow, at where we want to be in the near or even distant future. This issue of *TRS-80 Microcomputer News* is for all those who are ready not only to embark on a new year but to begin some new phase of their experience with computers.

GETTING STARTED

If you have been hesitant about buying a computer or timid in your approach to computers, perhaps our "Getting Started" article will get you on the right track. We've also included programs which will illustrate some of the ways a computer can be programmed to work for you. (A special thanks once more to all the readers who send in their programming or computer use ideas to share with others.)

HOW TO START YOUR OWN BULLETIN BOARD

This month the Simon's answer all those questions you've been asking about getting your own Bulletin Board started. If you're seriously—or even not so seriously—thinking of starting up your own Bulletin Board, don't miss Communications Corner. You'll find that the advice from these "pros" will not only help you in making your decision but will give you essential guidelines for getting started.

HOW MANY "BITES" IN YOUR COMPUTER??

No, No! That's bytes or bits. The language of computers is as strange as any foreign language to the novice. We decided to top off this issue with a glossary of terms which we hope will prove useful to beginners.

IS THAT YOUR COMPUTER SINGING?!

Okay, maybe not "singing" but your Model III/4 can be programmed to play music arranged in 4 or 5 voices. (With Orchestra-90™ and a Model III you can play 4 part harmony; with the Model 4 you can play 5 voice arrangements.) In this month's Musical Notes, Bryan Eggers explains how to access CompuServe's ORCHESTRA-90 SIG and download free music files for immediate use with your Model III/4 and Radio Shack's new Orchestra-90™ STEREO music synthesizer.

BEGINNING IN FEBRUARY 1984 — STREAMLINED SUBSCRIPTION RENEWAL

Beginning in the February issue of the *TRS-80 Microcomputer News*: if your subscription is up for renewal, you will find in the magazine: a postage-paid business reply envelope with a message reading "Your Subscription Is About To Expire!"

In addition, there will be a special renewal offer: with renewal you can purchase at half-price a handsome, deluxe binder—does not require 3-hole punch. It is designed to hold up to 12 issues of your magazine. A terrific buy! Binder offer expires June 30, 1984.

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It's the quick, easy way to renew your subscription!

!!ANNOUNCING "MODEL 2000"!!

The REALLY BIG event this month is Tandy's new Model 2000—and what a way to start a new year! We are very excited about this innovative system. Not only is the modular design aesthetically appealing but the ability to adjust and arrange the physical components of this system into different configurations should make it particularly attractive to those who must fit their system into spatial settings with special requirements.



THE END OF THE BEGINNING

That's it! It looks like another exciting and challenging year. We hope this issue of *TRS-80 Microcomputer News* helps get your computing year off to a good start. Enjoy!

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The TRS-80 Newsletter welcomes the receipt of computer programs, or other material which you would like to make available to users of TRS-80 Microcomputer systems. In order for us to reprint your submission, you must specifically request that your material be considered for reprinting in the newsletter and provide no notice that you retain copyrights or other exclusive rights in the material. This assures that our readers may be permitted to recopy and use your material without creating any legal hassles.

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Material may be submitted by mail to P.O. Box 2910, Fort Worth, Texas 76113-2910, or through CompuServe. The Microcomputer News' CompuServe user ID number is 70007.535.

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TRS-80® Microcomputer News

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Prices shown in TRS-80 MICROCOMPUTER NEWS are in U.S. Funds.

Getting Started

The purchase of a computer system can be an exciting yet frightening experience. There are many things that enter into the decision of what system to buy such as hardware, available software, and after sale support. Hopefully, the following information will be helpful when you are faced with such a decision.

HARDWARE: WHICH COMPUTER

The purchase of hardware is the first step. In many cases it's best to seek professional help (such as Radio Shack sales representatives) to decide on a system to meet your needs. One thing you should keep in mind is future growth. As your company grows, so should your computer operations. One needs to buy not just for the present, but also for the future. An expandable computer such as the TRS-80 Model 12 is a prime example. A small business may need only a single user accounting system in its early years. Growth of the company may require a larger more efficient system with multi-user capabilities. The Model 12 gives you that option. Simply upgrade the existing Model 12 to a Model 16, add a hard disk drive, a couple of DT-1's, and use the TRS-XENIX operating system. You now have a true multi-user, multi-tasking computer system. With TRS-XENIX you have the capability to add up to five additional users. This means that you can run six different programs at any one time from the same computer. A big question that arises is, "What about the work I've done. Can I upgrade it too?" The answer is yes, most of it can be upgraded. Radio Shack offers upgrades for several of our packages that will allow you to take existing data from TRSDOS and convert it to TRS-XENIX.

SOFTWARE: WHAT DO YOU WANT TO BE ABLE TO DO

Software is a major concern in the purchase of a system. You must make sure when buying a system, the software you will need is available for that machine. This is where a salesperson can be a major asset. Given your requirements as to packages and type of system wanted, the salesperson should be able to make valuable recommendations as to which system and software best suits your needs. Once again I must emphasize that you need to consider future growth of your business. There are several packages available that will suit your current needs and yet have the capabilities to grow with your company. Many of the COBOL accounting packages for the Model 12/16 have stated system capacities; however these are for the floppy disk user. With the addition of a hard disk one can expand well past these stated limits. The limitations of these packages are not hard coded in the programs; disk storage space is the governing factor on how much information the package can contain.

PRINTERS: WHAT KIND OF HARDCOPY DO YOU WANT

With so many different printers available today it's hard to

decide on one in particular. To make a choice you must evaluate your needs. Will the computer be used for word processing? This is usually an important factor. Check to see if the printer has a word processing mode which gives letter quality printing. Also take into consideration if the software is written for use with a parallel printer. If a serial printer is used, you must first use SETCOM to enable the port, then give a "FORMS S". This will send the output out the serial port.

LOCATION: WHERE TO INSTALL YOUR SYSTEM

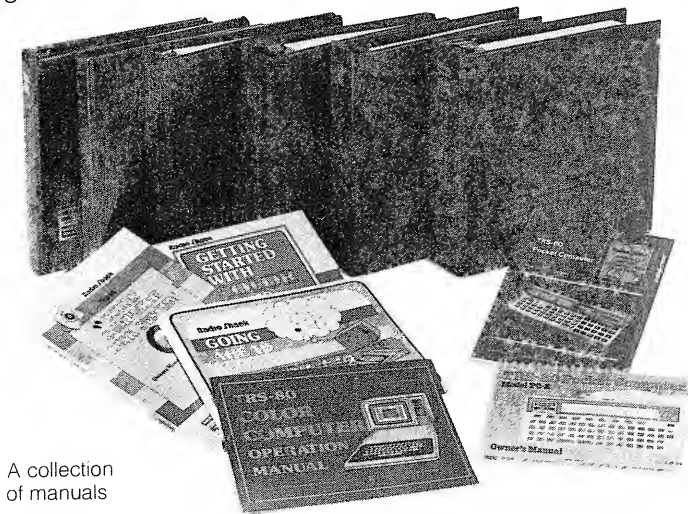
Choosing a location for your computer is a very important decision. An ideal working environment is essential. As with any electronic equipment, a computer is sensitive to power line conditions. If you are operating your computer in an environment where there is a heavy load of electrical machinery such as copiers, refrigerators, or other electrical equipment, we suggest you isolate your computers power supply by installing a "dedicated" power line. This will help prevent "brownouts", periodic drops in line voltage, or power line "spikes" (intermittent surges of very large voltage levels). Since the computer's memory is "volatile", a "brown-out" or power "spike" can cause program and/or data to be lost or scrambled. Power line problems are rare and many times can be solved before they occur by the proper choice of installation location for your computer system.

STARTING UP: USING YOUR SYSTEM

Once a system has been purchased the excitement grows, as does the anticipation. Many times people get anxious and jump right in thinking it's easy to master the computer. This attitude usually leads to nothing but trouble. The first thing we recommend is "READ THE MANUAL". This may take some time but the knowledge gained here will prove to be an asset and a time saver in the future. When you first open the manual for a Radio Shack product there should be a card in the front. This is the owners registration card that must be sent in. Without this card on file you will not be notified of any changes made to the hardware, documentation, or operating system. Once you have read the manual, turn on the computer and begin to familiarize yourself with it. Without first reading the operations and system manuals the computer will seem to be a "strange animal" and be difficult to grasp.

After becoming familiar with the computer and the operating system you're ready to begin utilizing the software. As with the computer, read the manuals first. Many of the manuals for the application packages contain some type of tutorial. We strongly suggest that you take time to go through these lessons. Before doing the lessons, fill out the software registration card contained in the manual and send it in. With this card on file you will be insured that all information pertaining to new patches, fixes, and/or upgrades to the registered software will be sent to you. If you have software that you feel

may not be the most current version, your local store representative can furnish the needed fixes, patches, and/or upgrades to update it.



A collection of manuals

BACKUPS: INSURING THE FUTURE OF YOUR SOFTWARE

The diskette contained in the packaged binder is the master diskette. You should update this diskette whenever there are corrections and/or enhancements made to the software. Make several backups of this diskette. These backups are the only diskettes that you should use to run the program. This brings us to the subject of "BACKUPS".

Backups are the best insurance you can have against unforeseen problems. Backups should be made at regular daily intervals. With daily backups, if there ever is a problem you only risk losing one day's work. Depending on your application, it may be a good idea to make backups more frequently. This is usually a good habit for packages that have an extremely heavy use. There is no such thing as having too many backups or making a backup too often. Some seem to feel that the time required to do this procedure could be used in a more productive way. But what if something happens to the disk that is being used? The five or ten minutes used to make a backup could have saved several hours or even days of re-keying the data that was lost. Enough said? Then let's move on to diskette care.

DISKETTES: HANDLE WITH CARE

Proper care of diskettes is very important. If diskettes are not handled correctly, bits of data can be lost or the diskette itself may become damaged and unusable. Follow these simple rules to protect your diskettes:

1. Store diskettes in a box, in a clean environment.
2. Keep diskettes away from electric or magnetic fields. This includes motors, magnetic tools, telephones, static electricity, excessive heat, etc.
3. When not in use, store diskettes in an upright position in their storage jacket.
4. Never touch exposed parts of the flexible disk.
5. Do not bend or crimp a diskette.
6. Use a felt-tip pen to write on the label.
7. Insert the diskette into the drive carefully and close the door gently. Don't force it.
8. Remove diskettes from drive units before turning your system on or off.

Following these rules will help to eliminate problems which can arise from faulty media. Now let's move on to another major topic, trouble-shooting.

PROBLEMS: WHEN SOMETHING WON'T WORK

Hardware problems are by far the most difficult to diagnose in the field. If you are trying to boot the system and continually receive system errors or boot errors, follow these steps. If the system is floppy drive based, try booting the system with several other diskettes. For hard disk users, if the hard disk will not boot the system try to do the same from floppy. If the floppy disk will boot the system then the trouble may be in your hard drive. In either case if the system will not boot try taking the diskettes to another computer. If the same thing happens there, then the problem lies in the software. If you are able to run another system with the same diskettes, the problem is of a hardware nature and a service call will be the next step towards correcting the problem.

With software problems the steps are somewhat similar. If the disk will not boot the machine take it to another machine and try it. If it does not work on another machine then most likely the diskette has been damaged and you will need to go to a backup of that diskette.

Another example of software problems is error messages. TRSDOS errors such as 4's, 5's, and 40's are prime examples. These errors are caused by lost information or damaged areas on the disk. Many times the only alternative is to go to a backup. Probably the most recognized error message comes from the COBOL accounting packages, error 98. This is caused by lost indices and the simplest recovery is a good backup. This should be an incentive to keep good daily backups.

For a COBOL error 98 on our accounting packages we do have other alternatives for recovery. All Computer Centers have an ISAM (Indexed sequential access method) recovery program available. This program can read the data files and reindex them so they will be of a usable nature. This program has its virtues, but it can cause several days of down time. The program can take anywhere from a few hours to a couple of days to run. The running of this program does not always recover all the data. There are times when several records can be lost or the files are so badly damaged that recovery is impossible. If the program is run and the files are rebuilt it is up to you to check the files to see what information was recovered. If information was lost you will have to re-key those transactions. This also should encourage adequate backups.

HELP: WHO TO CALL WHEN YOU NEED HELP

If help is needed on how to run a program, to correct a mistake, or to help solve a questionable situation, we suggest that you go to the store where you purchased the software. A representative there should be able to help solve the problem. If they cannot help, ask if there is someone else in your local area that may be of some assistance. If there is no help to be found locally, all is not lost. Place a call to Computer Customer Service in Fort Worth. The staff here is well trained, and individual groups answer questions in designated areas of expertise.

If you do find yourself placing a call to Fort Worth, you should have some information readily available. Jot down the package name, catalog number, version number, and any

(Continued on page 6)

Who Needs CitiLine? It Might Be You!

by Carol Morton

In this day of proliferating plastic cards it may be hard to imagine you need even one more. If you are a regular Radio Shack customer there are some advantages to having a CitiLine account that you should consider. Let's take a look at CitiLine, what it is and what it can do for you.

CitiLine is a revolving loan from Citibank which is made available to qualified Radio Shack customers. The interest rate is 1.8% a month (21.6% annual percentage rate) with up to 30 months to pay. And for those who qualify, the credit limits are typically higher than those available with ordinary bankcards. The maximum available is \$25,000 to qualified customers. Minimum loan levels are \$225 for initial loans and \$100 for repeat loans. Other attractive features of this loan include no money down, no prepayment penalty, no annual fee and a credit line that can be used again and again.

**USE
YOUR**



Given its attractive features you may still wonder why you need this credit service in addition to your other credit lines. First, there is convenience. Once established, your CitiLine credit is available to you at any Radio Shack store, Computer Center or franchised dealer in the United States. In addition to Radio Shack's wide variety of general electronic products, you can use your CitiLine credit to purchase new or additional telephone systems. You can get the computer system you want and start using it now. You can add to your system or upgrade an old system; and the service charges for that upgrade may also be charged to your CitiLine account. The software packages you need to get your project going are immediately available. CitiLine makes it easy to get the components you want, when you want them.

But there is more to CitiLine than convenience. There are special advantages in using CitiLine for both personal and business purchases. If your personal computer is used for both personal and business purposes and you want to take advantage of the tax credits open to you, you will need itemized records of each purchase. (For more information about tax regulations regarding personal computers and permissible deductions, contact your accountant or local IRS representative.) Itemized records are also essential if your Radio Shack purchases are for your own business or for your employer. The monthly CitiLine statement provides an itemized list of purchases. By using CitiLine for all your Radio Shack and computer purchases, you can keep other credit accounts open for different activities such as travel expenses, clothing, household goods, etc.

That's what CitiLine offers you: a higher credit ceiling, an open credit line for repeated use, competitive monthly pay-

ments and an alternative to overloading your other credit accounts. And don't forget the advantage of itemized records for business and tax purposes.

When you are ready to make a significant purchase at your local Radio Shack store, Computer Center, or franchised dealer, take the time to consider the advantages of a CitiLine account. After thoughtful consideration, you may realize you do need CitiLine.

Getting Started (From page 5)

error messages that may have occurred. Also, make note of exactly where in the program the problem occurred. This will be of great help and will keep the phone time down to a minimum. If the problem you are experiencing is a known problem the answer could be readily available. If the problem is a unique occurrence, you may be asked to send in your data for further evaluation. This allows us to better see the problem and serves as an aid in reaching a solution. If the problem is of a severe nature and we are not able to salvage your data, the last alternative is to re-key. Once again we see the importance of a good backup.

CONCLUSION: REMEMBER

In conclusion there are several things to remember. Read your manual carefully and make daily backups as a security measure. Always register software and update the software as patches, fixes, and upgrades become available. Utilize local resources to save time. If you follow the advice given in this article, you will find that many problems that occur have a solution just a "backup" away.



Computer Customer Service Address and Phone Numbers

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Home Software	(817) 338-2395
Educational Software	(817) 338-2396
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Musical Notes

by Bryan Eggers
Software Affair, Ltd.

Say the words "music synthesizer" and most people think of a keyboard instrument with lots of switches, cables and dials. For a few hundred dollars you can buy a really nice one.

However, there is one catch—these instruments must actually be PLAYED to produce music. In other words, physical dexterity, as well as musical knowledge, are required.

Now there is a different type of music synthesizer available, one that can be PROGRAMMED to reproduce any written sheet music, even if you can't read music or are "all thumbs" in the physical dexterity department.

Radio Shack's new Orchestra-90™ STEREO music synthesizer uses a powerful music language program to translate sheet music notation into a symbolic form that your TRS-80 Model III/4 Microcomputer can play. Save a music file to tape or disk and Orchestra-90™ will play it for you anytime you want to hear it. You can program Orchestra-90™ to play up to 5 different instruments simultaneously! At \$79.95 this is a real bargain, especially since many of the expensive keyboard systems can only play ONE note at a time (they cannot synthesize two notes simultaneously) and I don't know of any that has sheet music transcription, program storage, editing and transposition capabilities as sophisticated as Orchestra-90™.

Proof of this simple music entry system are the literally THOUSANDS of "ORCH-90" music files in circulation. If you asked for a demonstration of ORCH-90 in your local Radio Shack store, the salesperson probably used a disk loaded with sample music files. These music files, as well as hundreds more, are available FREE on CompuServe. You pay only the normal connect time charges while downloading.

In this column, we'll explain how to access CompuServe's ORCHESTRA-90 SIG and how to download music files from the SIG database. A good musician is always aware of what the "competition" is doing, and you can learn a lot by studying the transcription techniques used by other SIG members. You can leave questions for these arrangers if you are interested in a specific "special effect" used in one of their music files. For example, in addition to percussion effects, ORCH-90 can also make unusual sounds like horses galloping, steam locomotives, and laser guns. Those sound effects were used to enhance the music files "Camptown Races", "Chattanooga Choo-Choo" and "The Empire Strikes Back", respectively. You'll learn tricks like this by studying various music files in the database.

You'll need a CompuServe account, modem and terminal program to access the ORCH-90 database. After logging onto the system, type "GO HOM-5". The menu asks if you want to access the "ORCH-90 ARCHIVES" or "ORCH-90 SIG". Select the SIG this time. I'll explain the ARCHIVES area in another column.

Music files for ORCH-90 are stored in the XA2 database. First, one comment about the format of these files. To avoid any conflicts with TRS-80 or CompuServe control codes, and to maintain as compact a music file as possible, the files are stored in a special ASCII format. A minor conversion is required before the music file can be loaded and played on ORCH-90.

There are two ways to download and convert the music files. One way is to download the file using your own terminal program, then convert the file with the ORCHUTIL/CMD program that you received with your ORCH-90. The second way is to use our FREE smart terminal program, "ORCTERM", that does the conversion automatically for you! This terminal program is stored in the XA1 database of the ORCH-90 SIG. The filename is ORCTRM.HEX. I'll explain both methods.

If you want to use your own terminal program instead of ORCTERM, type "XA2" to access the music database. All ORCH-90 music files are stored in the database with a ".A85" extension. You can type "CAT /DES" to get a listing of the filenames, keywords, and file descriptions. This information includes the name of the song, the name of the arranger and the number of voices used in the arrangement. If you have a printer, you may want to make a hardcopy of the entire file for future reference.

Let's examine a specific file, SITTIN.A85. The description obtained by the "CAT /DES" commands tells us that it is "SITTIN' ON TOP OF THE WORLD" for ORCH-90, arranged in 4 voices (4-part harmony) by Larry Alexander. Larry is a talented and innovative ORCH-90 arranger whose music files deserve special study.

Type "DOW SITTIN.A85" to download this file and use the appropriate commands in your terminal program to save the file to disk with the filename SITTIN/ASC. Note the "/ASC" extension. Type "EX" to exit the database, then type "OFF" to log off the system.

To convert the file to ORCH format, make sure you have the ORCHUTIL/CMD program on line and at "TRSDOS Ready" type: "ORCHUTIL". Press (I) to set the Input mode, followed by (A) to read ASCII (/ASC) files. The output of ORCHUTIL is already set to ORCH (/ORC) format, so you can now Read in ASCII files and Write them out as ORCH files.

To convert SITTIN/ASC to ORCH format, press (R) to Read the file, and enter the filename "SITTIN/ASC". ORCHUTIL will load the file into its memory buffer. Then, press (W) to Write the file and enter the output filename of "SITTIN/ORC". ORCHUTIL will convert the file to ORCH format as it writes it to disk.

The result is the file SITTIN/ORC that is ready to be loaded into ORCH-90 and played. The ASCII file SITTIN/ASC is no longer needed and may be killed off the disk.

ORCTERM

ORCTERM is a smart terminal program written by Larry Payne for TRS-80 Model III or Model 4 (in Model III mode) and is FREE in the XA1 database of the ORCH-90 SIG. It even has a built-in HELP display. Use your own terminal program to download the file ORCTRM.HEX. Use any HEX-to-BINARY utility program to convert the file to binary (machine-language) format and rename the file ORCTERM/CMD. If you don't have such a utility you can use a short (two-line) program in the XA1 database called HEXBIN.BAS. This Basic program will do the conversion for you.

Downloading music files with ORCTERM is much easier. Here's the procedure for downloading SITTIN.A85:

Type "DOW SITTIN.A85" to download the file. ORCTERM responds automatically as CompuServe opens its buffer, transmits the file, then closes its buffer. At the end of the transmission, press **(CLEAR) + (F)** and enter "SITTIN/ORC" as the filename when you save it to disk. Note that you are saving the file with the correct ORCH extension (/ORC). This tells ORCTERM to convert the file from ASCII-to-ORCH as it saves it to disk. No second ASCII file is ever generated. The music file you just saved to disk is ready to be played by ORCH-90. Using ORCTERM, you can download several songs from the database, saving each to disk with the /ORC extension, then log off CompuServe and play them all without any further conversion.

The current version of ORCTERM is disk-based only, but a FREE tape-based version will soon be available.

If you are using ORCH-90 with a Model III TRS-80, make note of the number of voices used in each arrangement and download only those arranged in 4 voices. Your ORCH-90 can play any 4 voice arrangement in the database, but not the 5 voice arrangements. You could load and play the 5-voice arrangements, but voice 5 will be ignored by the compiler and will thus be silent.

Model 4 users can download and play any ORCH-90 music file in the database, regardless of whether the song is arranged in 4 or 5 part harmony. This is possible because of the faster 4 Mhz clock in your computer. For optimum results, always play 4-voice arrangements on ORCH-90 configured for 4 voices, and play 5-voice arrangements on ORCH-90 configured for 5 voices.

Once a file has been downloaded and listened to, you can study the file, then experiment with it. Try new instrument definitions, transpose the file to a different key, transpose individual instruments up or down, and vary the tempo. Try all kinds of different settings and keep track of the ones you like. Then, use them in your arrangements.

SINGERS, TAKE NOTE!

Perhaps you'd like to practice singing along with ORCH-90? Set up your music file so that the melody is played with Voice 1, then use ORCH-90's J command to reduce the volume of that voice to 0. (see INSTRUMENT DEFINITIONS in the manual). Now when ORCH-90 plays the music file the melody will be SILENT, so you can sing while ORCH-90 accompanies you with the rest of the arrangement! And, if the song isn't in your key, you can transpose it to any key you want by inserting the appropriate ">" and "<" transposition commands. You can command ORCH-90 to play that accompaniment over and over again until you tell it to stop. Great for practice sessions!

In subsequent columns we'll explain the fundamentals of sheet music transcription and eventually show you how to upload YOUR music files into the ORCH-90 SIG database.

(Orchestra-90 is a trademark of Software Affair, Ltd.)

1984 National Computer Camps

Those "How I Spent My Summer Vacation" essays will never be the same, at least not for youngsters attending the 1984 National Computer Camps. Camp locations are in: Simsbury, Connecticut; Atlanta, Georgia; St. Louis, Missouri; Cleveland, Ohio; and Portland, Oregon. This unique recreational and educational experience is directed by Dr. Michael Zabinski, Professor at Fairfield University. Dr. Zabinski serves as consultant to school systems throughout the country. He has written several textbooks on computers including *Introduction to TRS-80 BASIC and Computer Programming*, Radio Shack catalog number 26-2116.

Campers may sign up for one or more weeks during June, July and August. The coed campers, ages 9-18, will enjoy small group instruction on the computers for ample "hands-on" experience. Dr. Zabinski will be assisted by experienced elementary and secondary school teachers.

The camp is for youngsters of all levels of computer experience, including no experience whatsoever. In addition to computers, the campers will enjoy superb recreational facilities including swimming and tennis.

Now in its seventh year, NCC is the original computer camp currently offered in the USA. For further information and a brochure contact Michael Zabinski, Ph.D. at (203) 795-9667, or write to National Computer Camps, Box 585, Orange, CT, 06477.



Learning About the MC-10 with Introduction to Micro Color BASIC

by Kathy Frasca Priest

Learning about the TRS-80 MC-10 microcomputer is easy and fun with Radio Shack's new *Introduction to Micro Color BASIC* classroom package. This package was written by Norman T. Bell, PhD, Professor of Educational Psychology at Michigan State University. *Introduction to Micro Color BASIC* includes an instructor manual and twenty-five student workbooks. The instructor manual contains 137 overhead transparencies for use as classroom visuals, with teaching hints keyed to each visual. The student workbooks are also keyed to the visuals, which creates an interactive learning atmosphere.

Each component of this instructional package was designed with teachers in mind. *Introduction to Micro Color BASIC* was written according to a highly successful teaching model, developed by Dr. Bell, that has been tested in a variety of instructional settings. Each of the ten chapters in *Introduction to Micro Color BASIC* contains five structured parts:

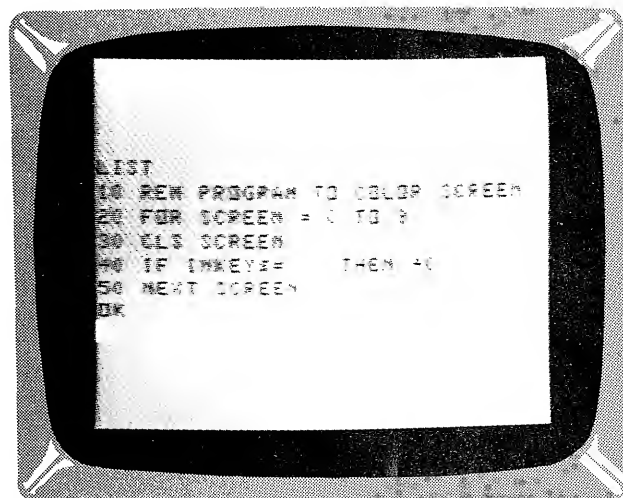
- an OVERVIEW, which gives students a general orientation to the lesson;
- INSTRUCTIONAL OBJECTIVES, which tell the students what specific skills they will learn in that lesson;
- a NOTE-TAKING GUIDE, to help the students focus on the important aspects of the lesson, and also to provide a complete set of notes for review;
- a brief, content-oriented QUIZ, to provide the students with a method of assessing their progress; and
- a hands-on ACTIVITY, to give students the opportunity to practice the concepts just learned. The activity uses material presented in the lesson, and shows students how well they are doing. Success at this point is very rewarding.

The manual has been designed to make teaching effective as well as enjoyable. For each overhead transparency in the instructor guide, there is a page of teaching hints to follow when using that transparency. For those transparencies with fill-in blanks, a paper copy of the visual is provided with the answers filled in, so that all the information the instructor needs to teach that particular page is readily available.

The instructor manual and the student workbooks parallel each other in content, form and wording. The same information the student sees on the overhead transparency is included in the student workbook. When the instructor fills in the answers to questions on the transparency, the students can fill in the same answers in their workbook pages.

In Lesson 1, *Introduction to the MC-10 Microcomputer*, students are introduced to the microcomputer and its five major components: input, processing, memory, output and

control. They familiarize themselves with the keyboard and learn the functions of special keys. An MC-10 program and its output are given, along with a detailed explanation of each BASIC system and program command used in the sample program. The lesson concludes by giving students the opportunity to enter, run and explain a Micro Color BASIC program.

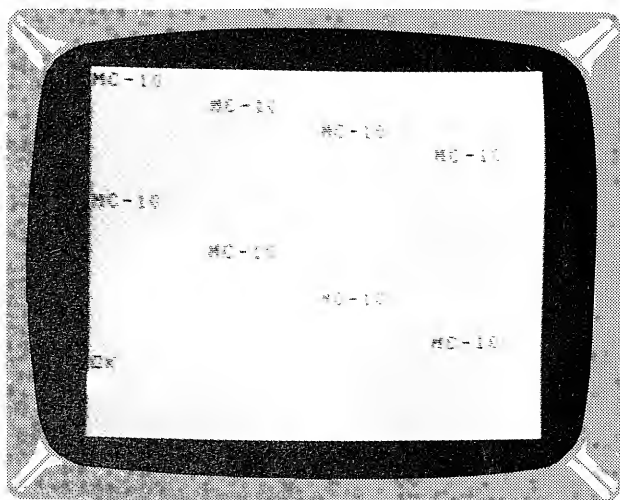


Lesson 2, *Introduction to BASIC Programming*, defines each line in a sample BASIC program and shows students how to add, change, and delete program lines. It also tells how to connect and use a tape recorder to save and load programs. Students learn the CSAVE, CLOAD and SKIPF commands and the errors that may occur when using these commands.

Lesson 3, *Memory in the MC-10*, defines memory-related terms, such as bit, byte, K, RAM and ROM. Students learn to use the LET command to put information into memory. Then the PRINT command is used to call the information back for display on the screen. Numeric and string variables are also discussed, along with the common errors associated with using them.

Lesson 4, *Controlling the MC-10 Video Display*, focuses on the actual placement of information on the screen. Students see the screen layout and learn to use two new print commands, PRINTTAB and PRINT@, to place text at specific screen locations. Also introduced are the concepts of "wrap-around," or wrapping the text around to the next line, and random number generation, which causes the computer to randomly select a number from a given range. At the end of

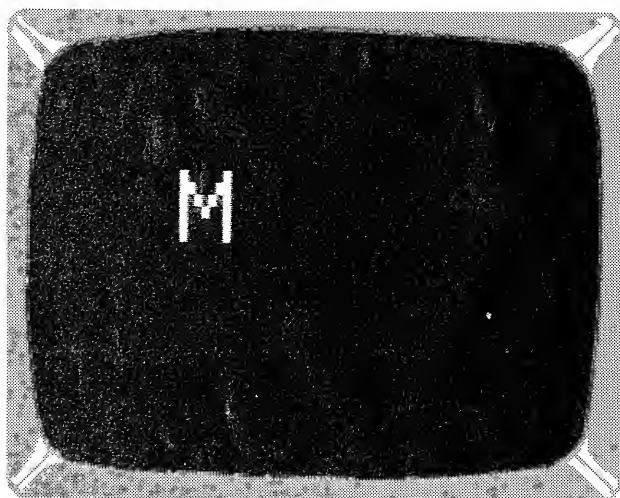
the lesson, students will be able to develop their own programming to control the video display.



Lesson 5, *Controlling Program Flow*, explains several ways to control the execution of a BASIC program by using conditional and unconditional branching. Students learn the GOTO and IF . . . THEN commands, and study how to use relational operators (such as > and <). By the end of the lesson, students will be able to use both conditional and unconditional branch commands to control the flow of their own programs.

Lesson 6, *Looping*, introduces the "loop"—a programming structure that tells the computer to repeat an operation a certain number of times. The lesson concentrates on the FOR-TO-NEXT-STEP command. Loops within loops are also discussed. At the end of the lesson, students will develop and modify their own programs using looping.

In Lesson 7, *Introduction to Graphics*, students learn how the MC-10 screen can be used in the graphics mode. This lesson explains how to use the SET command to light any block of the screen with any of the colors available, and how to use the RESET command to return a specified portion of the screen to its original color. At the end of the lesson, students develop their own graphics displays which demonstrate both color and movement.



Lesson 8, *Reading Data*, introduces the READ-DATA command, the rules for using it, and the OUT-OF-DATA error messages associated with it. Students also learn to use the RESTORE command and how to use a word in a program as a "stopper."

Lesson 9, *Interactive Programming Using the INPUT Command*, concentrates on the purpose, format and usage of the INPUT command. This command allows the computer to accept data from the keyboard during program run and to store the data in the indicated memory location. Three methods of storing values in the computer's memory are presented. At the end of the lesson, students develop programs using the INPUT command.

Lesson 10, *Arithmetic with the MC-10*, explains how to use the MC-10 as a calculator for arithmetic purposes. Students learn the four arithmetic operators, their symbols (+, -, *, and /) and usage. An easy rule to remember the order of execution is provided, along with some arithmetic examples on which to practice.



Introduction to Micro Color BASIC is designed to require little computer knowledge on the part of the instructor. It is recommended, however, that the teacher read the operation manual included with the MC-10 microcomputer, so that he or she can set up the system and feel comfortable with it. The teacher should also look through the student manual and work some of the programming examples in the instructor guide to become familiar with the material.

Each lesson (not including the student activity) can be covered in 45 to 50 minutes. Ideally, each student should have a computer, but if that is not possible a lab schedule should be arranged so that each student can complete the activities. The information in each lesson must be mastered before proceeding, as each lesson builds upon the previous one. The activity and the quiz at the end of each lesson need not be graded. Answers to each quiz are provided in the back of the student manual, so that students can tell immediately if an answer is right or wrong. This reinforces the idea of the computer as non-threatening and fun to use.

Introduction to Micro Color BASIC (Catalog Number 26-2686) will be available soon through your local Radio Shack store or Computer Center. Or contact the Radio Shack Regional Educational Coordinator in your

area. Radio Shack has a network of 25 Regional Educational Coordinators nationwide to help schools and districts with their microcomputing needs.



MAGAZINES

Below are eight magazines of special interest to TRS-80 owners that we believe have editorial content of high quality and will be of use to our customers.

Basic Computing—The TRS-80
User Journal
3838 South Warner Street
Tacoma, WA 98409
(206)475-2219

Color Computer Magazine
Highland Hill
Camden, ME 04843
(207)236-9621

80 Micro
P.O. Box 981
Farmingdale, NY 11737

Hot CoCo
P.O. Box 975
Farmingdale, NY 11737

Portable 100—The Magazine for
Model 100 Users
P.O. Box 468
Hasbrouck Heights, NJ 07604

PCM—The Portable Computing Magazine
9529 U.S. Highway 42
P.O. Box 209
Prospect, KY 40059

Rainbow (Covers the TRS-80 Color Computer)
P.O. Box 209
Prospect KY 40059
(502)228-4492

two/sixteen magazine
P.O. Box 1216
Lancaster, PA 17603
(717)397-3364

ISAM

Richard J. Bueche

Here are two Cobol programs for the Model III. These programs will let you work with Cobol ISAM files.

CFISAM10

```
000100 IDENTIFICATION DIVISION.
000110 PROGRAM-ID. CFISAM10.
000120 AUTHOR. Richard Bueche.
000130 DATE-WRITTEN. 04/18/82.
000140** Create Data & Total Files **
000150 ENVIRONMENT DIVISION.
000160 CONFIGURATION SECTION.
000170 SOURCE-COMPUTER. TRS-80-MOD-3.
000180 OBJECT-COMPUTER. TRS-80-MOD-3.
000190 INPUT-OUTPUT SECTION.
000200 FILE-CONTROL.
000210 SELECT MASTER-DISK-FILE
000220 ASSIGN TO RANDOM, "ISAM10/DAT:0"
000230 ORGANIZATION IS INDEXED
000240 ACCESS MODE IS DYNAMIC
000250 RECORD KEY IS MASTER-KEY.
000260
000270 SELECT TOTAL-DISK-FILE
000280 ASSIGN TO RANDOM, "TOTAL10/DAT:0"
000290 ORGANIZATION IS RELATIVE
000300 ACCESS MODE IS RANDOM
000310 RELATIVE KEY IS RECORD-ONE.
000320 DATA DIVISION.
000330 FILE SECTION.
000340 FD MASTER-DISK-FILE
000350 BLOCK CONTAINS 2 RECORDS
000360 LABEL RECORDS ARE STANDARD
000370 DATA RECORD IS MASTER-REC.
000380 01 MASTER-REC.
000390 05 MASTER-KEY PIC X(8).
000400 05 REST-OF-MASTER PIC X(120).
000410
000420 FD TOTAL-DISK-FILE
000430 BLOCK CONTAINS 1 RECORDS
000440 LABEL RECORDS ARE STANDARD
000450 DATA RECORD IS CONTROL-REC.
000460 01 CONTROL-REC.
000470 05 TOTAL-RECORDS PIC 999.
000480
000490 WORKING-STORAGE SECTION.
000500 01 CONTROL-TOTAL.
000510 05 RECORD-ONE PIC 9 VALUE 1.
000520 05 TOTAL-ACTIVE PIC 999 VALUE 0.
000530
000540 PROCEDURE DIVISION.
000550 START-UP.
000560 OPEN OUTPUT MASTER-DISK-FILE, TOTAL-DISK-FILE.
000570 WRITE CONTROL-REC FROM TOTAL-ACTIVE.
000580 CLOSE MASTER-DISK-FILE, TOTAL-DISK-FILE.
000590 DISPLAY "Data files created on drive 0." LINE 1 ERASE.
000600 STOP RUN.
000610 END PROGRAM
```

ISAM10

```
000100 IDENTIFICATION DIVISION.
000110 PROGRAM-ID. ISAM10.
000120 AUTHOR. Richard Bueche.
000130 DATE-WRITTEN. 04/18/82.
000140** Menu-less ISAM record keeper **
000150 ENVIRONMENT DIVISION.
000160 CONFIGURATION SECTION.
000170 SOURCE-COMPUTER. TRS-80-MOD-3.
000180 OBJECT-COMPUTER. TRS-80-MOD-3.
000190 INPUT-OUTPUT SECTION.
000200 FILE-CONTROL.
000210 SELECT MASTER-DISK-FILE
000220 ASSIGN TO RANDOM, "ISAM10/DAT:0"
000230 ORGANIZATION IS INDEXED
000240 ACCESS MODE IS DYNAMIC
000250 RECORD KEY IS MASTER-KEY.
000260
000270 SELECT TOTAL-DISK-FILE
000280 ASSIGN TO RANDOM, "TOTAL10/DAT:0"
000290 ORGANIZATION IS RELATIVE
000300 ACCESS MODE IS RANDOM
000310 RELATIVE KEY IS RECORD-ONE.
000320 DATA DIVISION.
```



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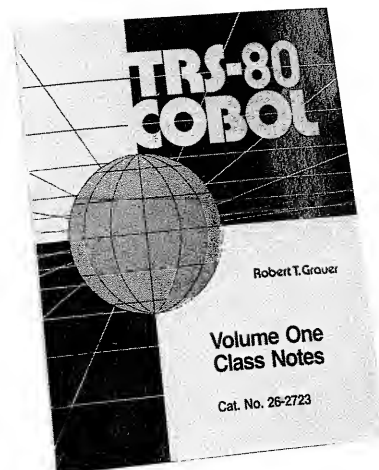
000330 FILE SECTION.
000340 FD MASTER-DISK-FILE
000350 BLOCK CONTAINS 2 RECORDS
000360 LABEL RECORDS ARE STANDARD
000370 DATA RECORD IS MASTER-REC.
000380 01 MASTER-REC.
000390 05 MASTER-KEY PIC X(8).
000400 05 REST-OF-MASTER PIC X(120).
000410
000420 FD TOTAL-DISK-FILE
000430 BLOCK CONTAINS 1 RECORDS
000440 LABEL RECORDS ARE STANDARD
000450 DATA RECORD IS CONTROL-REC.
000460 01 CONTROL-REC.
000470 05 TOTAL-RECORDS PIC 999.
000480
000490 WORKING-STORAGE SECTION.
000500 01 RECORD-WORK-AREAS.
000510 05 MASTER-KEY-WORK PIC X(8).
000520 05 FULL-NAME-WORK PIC X(24).
000530 05 ADDR-LINE-1-WORK PIC X(24).
000540 05 ADDR-LINE-2-WORK PIC X(24).
000550 05 CITY-WORK PIC X(18).
000560 05 STATE-WORK PIC XX.
000570 05 ZIP-WORK PIC X(10).
000580 05 PHONE-WORK PIC X(12).
000590 05 DATE-UPDATED PIC X(6).
000600 01 CONTROL-TOTAL.
000610 05 RECORD-ONE PIC 9 VALUE 1.
000620 05 TOTAL-ACTIVE PIC 999 VALUE 0.
000630 01 MISCELLANEOUS.
000640 05 SYS-DATE PIC XX/XX/XX.
000650 05 LAST-UPDATED PIC XX/XX/XX.
000660 05 BLANKS PIC X(64) VALUE SPACES.
000670 05 TEMPORARY PIC X(20).
000680 01 DASHES.
000690 05 FILLER PIC X(32) VALUE
000700 "-----".
000710 05 FILLER PIC X(32) VALUE
000720 "-----".
000730 77 ENTER-KEY PIC XX.
000740
000750 PROCEDURE DIVISION.
000760 START-UP.
000770 OPEN I-O MASTER-DISK-FILE, TOTAL-DISK-FILE.
000780 READ TOTAL-DISK-FILE INTO TOTAL-ACTIVE.
000790 ACCEPT SYS-DATE FROM DATE.
000800 MAINLINE.
000810 DISPLAY SPACES LINE 1 ERASE.
000820 PERFORM DISPLAY-SCREEN-MASK.
000830 MOVE SPACES TO MASTER-REC, RECORD-WORK-AREAS.
000840 ACCEPT MASTER-KEY-WORK LINE 5 POSITION 34 TAB.
000850 IF MASTER-KEY-WORK = "END" PERFORM STOP-THE-PROGRAM.
000860 IF MASTER-KEY-WORK = SPACES GO TO MAINLINE.
000870 MOVE MASTER-KEY-WORK TO MASTER-KEY.
000880 READ MASTER-DISK-FILE KEY IS MASTER-KEY
000890 INVALID KEY PERFORM ADD-A-RECORD.
000900 MOVE MASTER-REC TO RECORD-WORK-AREAS.
000910 PERFORM DISPLAY-A-RECORD.
000920 DISPLAY BLANKS LINE 15.
000930 DISPLAY "(E)dit, (D)delete record or hit ENTER to skip "
000940 LINE 15.
000950 ACCEPT ENTER-KEY LINE 15 POSITION 0.
000960 IF ENTER-KEY = "D" PERFORM DELETE-A-RECORD
000970 ELSE IF ENTER-KEY = "E" PERFORM EDIT-A-RECORD.
000980 GO TO MAINLINE.
000990
001000 ADD-A-RECORD.
001010 DISPLAY "No such record! Add it Y/N? " LINE 15.
001020 ACCEPT ENTER-KEY LINE 15 POSITION 0.
001030 IF ENTER-KEY = "N" GO TO MAINLINE.
001040 DISPLAY BLANKS LINE 15.
001050 DISPLAY "ADD MODE" LINE 15.
001060 PERFORM ACCEPT-DATA.
001070 WRITE MASTER-REC FROM RECORD-WORK-AREAS.
001080 ADD 1 TO TOTAL-ACTIVE.
001090
001100 EDIT-A-RECORD.
001110 DISPLAY BLANKS LINE 15.
001120 DISPLAY "EDIT MODE" LINE 15.
001130 PERFORM ACCEPT-DATA.
001140 DISPLAY BLANKS LINE 15.
001150 DISPLAY "Ready to rewrite to disk Y/N? " LINE 15.
001160 ACCEPT ENTER-KEY LINE 15 POSITION 0.
001170 IF ENTER-KEY = "N" GO TO MAINLINE.
001180 ACCEPT DATE-UPDATED FROM DATE.
001190 REWRITE MASTER-REC FROM RECORD-WORK-AREAS.
001200
001210 DELETE-A-RECORD.
001220 DISPLAY BLANKS LINE 15.
001230 DISPLAY "DELETE MODE -- Delete above Y/N? " LINE 15.
001240 ACCEPT ENTER-KEY LINE 15 POSITION 0.
001250 IF ENTER-KEY = "Y" DELETE MASTER-DISK-FILE RECORD

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001260 SUBTRACT 1 FROM TOTAL-ACTIVE.
001270
001280 STOP-THE-PROGRAM.
001290 REWRITE CONTROL-REC FROM TOTAL-ACTIVE.
001300 CLOSE MASTER-DISK-FILE, TOTAL-DISK-FILE.
001310 DISPLAY "*** PROGRAM OVER ***" LINE 1 ERASE.
001320 STOP RUN.
001330
001340 DISPLAY-A-RECORD.
001350 DISPLAY MASTER-KEY-WORK LINE 5 POSITION 34.
001360 DISPLAY FULL-NAME-WORK LINE 6 POSITION 34.
001370 DISPLAY ADDR-LINE-1-WORK LINE 7 POSITION 34.
001380 DISPLAY ADDR-LINE-2-WORK LINE 8 POSITION 34.
001390 DISPLAY CITY-WORK LINE 9 POSITION 34.
001400 DISPLAY STATE-WORK LINE 10 POSITION 34.
001410 DISPLAY ZIP-WORK LINE 11 POSITION 34.
001420 DISPLAY PHONE-WORK LINE 12 POSITION 34.
001430 MOVE DATE-UPDATED TO LAST-UPDATED.
001440 DISPLAY LAST-UPDATED LINE 13 POSITION 34.
001450
001460 ACCEPT-DATA.
001470 MOVE FULL-NAME-WORK TO TEMPORARY
001480 ACCEPT FULL-NAME-WORK LINE 6 POSITION 34 TAB
001490 IF FULL-NAME-WORK = SPACES
001500 MOVE TEMPORARY TO FULL-NAME-WORK.
001510 MOVE ADDR-LINE-1-WORK TO TEMPORARY
001520 ACCEPT ADDR-LINE-1-WORK LINE 7 POSITION 34 TAB
001530 IF ADDR-LINE-1-WORK = SPACES
001540 MOVE TEMPORARY TO ADDR-LINE-1-WORK.
001550 MOVE ADDR-LINE-2-WORK TO TEMPORARY
001560 ACCEPT ADDR-LINE-2-WORK LINE 8 POSITION 34 TAB
001570 IF ADDR-LINE-2-WORK = SPACES
001580 MOVE TEMPORARY TO ADDR-LINE-2-WORK.
001590 MOVE CITY-WORK TO TEMPORARY
001600 ACCEPT CITY-WORK LINE 9 POSITION 34 TAB
001610 IF CITY-WORK = SPACES
001620 MOVE TEMPORARY TO CITY-WORK.
001630 MOVE STATE-WORK TO TEMPORARY
001640 ACCEPT STATE-WORK LINE 10 POSITION 34 TAB
001650 IF STATE-WORK = SPACES
001660 MOVE TEMPORARY TO STATE-WORK.
001670 MOVE ZIP-WORK TO TEMPORARY
001680 ACCEPT ZIP-WORK LINE 11 POSITION 34 TAB
001690 IF ZIP-WORK = SPACES
001700 MOVE TEMPORARY TO ZIP-WORK.
001710 MOVE PHONE-WORK TO TEMPORARY
001720 ACCEPT PHONE-WORK LINE 12 POSITION 34 TAB
001730 IF PHONE-WORK = SPACES
001740 MOVE TEMPORARY TO PHONE-WORK.
001750
001760 DISPLAY-SCREEN-MASK.
001770 DISPLAY "Cobol ISAM File Program --" LINE 1.
001780 DISPLAY "(c)1982 Tandy Corp." LINE 1 POSITION 27.
001790 DISPLAY "Version 1.0" LINE 1 POSITION 52.
001800 DISPLAY "System Date:" LINE 3.
001810 DISPLAY SYS-DATE LINE 3 POSITION 14.
001820 DISPLAY "Total Records:" LINE 3 POSITION 45.
001830 DISPLAY TOTAL-ACTIVE LINE 3 POSITION 60.
001840 DISPLAY "Master key (or END):" LINE 5 POSITION 10.
001850 DISPLAY "Full Name:" LINE 6 POSITION 20.
001860 DISPLAY "Address line 1:" LINE 7 POSITION 15.
001870 DISPLAY "Address line 2:" LINE 8 POSITION 15.
001880 DISPLAY "City:" LINE 9 POSITION 25.
001890 DISPLAY "State:" LINE 10 POSITION 24.
001900 DISPLAY "Zip Code:" LINE 11 POSITION 21.
001910 DISPLAY "Phone:" LINE 12 POSITION 24.
001920 DISPLAY "Date last updated:" LINE 13 POSITION 12.
001930 DISPLAY DASHES LINE 14.

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Using Spectaculator

We received suggestions from two readers for ways to use Spectaculator. Since the focus of this issue is primarily on information for beginners, these ideas on different ways of using this spreadsheet for the Color Computer seemed especially appropriate. We hope that these suggestions will help you to create uses for this program to fit your own requirements.

	5	6	7	8
1	BUDGET	ACTUAL	DIFFERENCE	
2	4951.00	355.79	138.21	
3	325.00	354.79	-29.79	
4	230.00	267.35	-37.35	
5	300.00	297.00	3.00	
6	100.00	87.00	13.00	
7				
8				
9				
10				
11				
12				
13				

Checkbook Record

Dennis L. Hargens
3004 Linda Drive
Ennis, TX 75119

With the use of SPECTACULATOR, a record of checkbook transactions can be set up that accomplishes two things. First to facilitate the balancing of your checkbook, a record can be set up to show the balance after each transaction. Second, the same worksheet can be used to show total spending in various accounts. The use of these two simultaneous capabilities makes this program a very useful addition to your Color Computer.

My first attempt to set up a worksheet proved cumbersome due to inexperience with this type of worksheet. It required two entries for each check in order to get a balance after each transaction and a cumulative total for the various accounts. Also, the need for two lines per check and the many initialized zeroes in the worksheet increased its complexity. All this inconvenience prejudiced me in favor of using a BASIC program to accomplish my objectives.

Recently, however, I developed a method for check entry that requires only one entry. The method also minimizes the number of initial zeroes and formulas. The basis for this worksheet is the formula command SMT. This column command is used with one other column command, SUMC1, to create the checkbook record. Account totalization is carried out through the use of one row formula SUMR1 at the bottom of the worksheet. The only other requirement is use of initialized zeroes in row 1 and column 1.

A worksheet totalizing ten accounts together with a checkbook record for fifty checks would be set up in the following manner. Initial zeroes are placed in column 1 through row 50 and in row 1 through column 11. These zeroes will be written over if a check entry is required in one of these elements. The labels for the accounts are placed at the bottom of the worksheet so that they are next to the account totals. Thus, row 51 is used for labels. Row 52 will contain the row formula SUMR1. This completes the account totalization part of the worksheet.

Next comes the checkbook record portion of the worksheet. The first ten columns will contain check amounts entered one per row in their respective account columns. Column 11 will contain deposit amounts entered as a negative number. Column 12 will contain a check label such as a check number or check payee. If a check number is used, this number should be entered via the text entry command. Column 13 will contain the column formula SUMC1. This column will contain the check amounts in the order in which they are entered irrespective of the associated account. Column 14 will contain the checkbook balance following each check or deposit transaction. This column will contain a formula consisting of a number, which is the beginning balance of the checkbook, minus SMTC13. This formula will subtract the cumulative sum of column 13 from the beginning checkbook balance. Thus, a balance following each check or deposit transaction is calculated and printed in column 14. This balance can be compared directly to the running balance in your checkbook.

To use the checkbook worksheet, enter each check or deposit in the proper account column. Enter the check number or payee in column 12 using the text entry command. Enter only one check per row. If you have a printer, you can print out the account labels and the total amounts for each account by printing out rows 51 and 52. A checkbook running balance can be printed out by listing columns 12, 13, and 14 to the printer. These columns will contain the check label, the check or deposit amount, and the checkbook balance following each transaction.

Budget Analysis and Travel Record

W. H. Kaufman
623 Colindas
San Rafael, CA 94903

My wife is a member of the committee of teachers that negotiates with our small suburban school district for their annual contract. The more information this committee has about the district's intentions, the better its members will know what to ask for and what they might expect to get. The district prepares and publishes a number of preliminary budgets during the same time the salary schedule is being discussed. While these preliminary budgets are not final, the school Board uses them to consider how money will be spent for the next year.

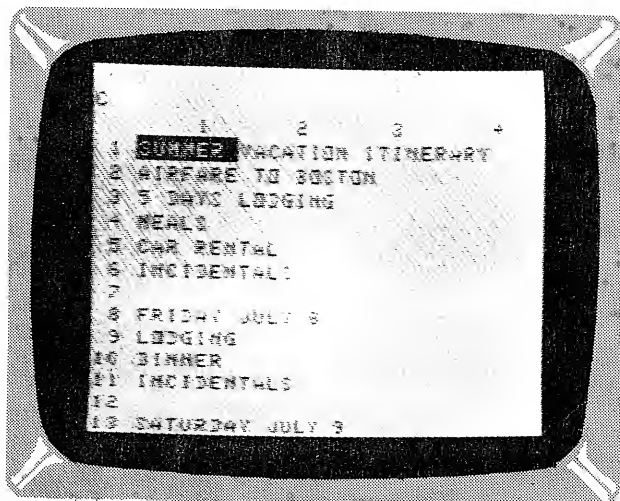
Last year, we used my 16K Color Computer and Spectaculator to examine the distribution of money in the proposed 1982/83 budget. Using the spread sheet, we set up six

columns. The first was a 25 space text label showing what each line item was. (Fortunately, there were less than 99 line items.) The second and third columns were the expenditures for 1980/81 and 1981/82 (conveniently provided for us by the district in one of its documents). The fourth was the proposed budget for 1982/83. After these figures were entered, column 5 calculated the average of columns 2 and 3 and then subtracted this average from column 4 and column 6 subtracted 1981/82 from 1982/83 (column 3 from column 4).

After the program calculated all the figures, we went through and looked at the large amounts in columns 5 and 6 as indicators of possible sources of money. For example, line 1300 showed a large difference between the average expenditure and what was proposed for this year. However, this money was identified as a supervisor who has been moved out of another position. After prowling around in the figures, identifying what we could, and comparing the total we could find with the total of the teachers salary scale, our estimate of the possible raise was within 1% of what was finally negotiated.

There is a lot of power in even relatively unsophisticated machines and programs. An interesting phenomena is to watch yourself curse the machine for taking a minute or two to do calculations it would have taken two mathematicians a week to do previously.

We also made use of Spectaculator in planning our summer vacation. We were going East for a family reunion and a trip down the East coast. We set up our itinerary and budget on Spectaculator. The first column was text labels of expenses. Column 2 was what we thought we could afford and column 3 was what these things actually cost. Column 4 subtracted column 3 from column 2 to see if a specific item kept to the budget. The bottom line, as all bottom lines do, totalled the whole thing to see if we were ahead of or behind budget. Column 5 was about 25 spaces for notes of one kind or another (hotel reservations, flight information, car rental numbers, etc.).



My wife and I discussed where we wanted to go and what we wanted to do. We set up a budget and filled up the text spaces with possible places to stay and things to do. We got our flight information from the Official Airline Guide from CompuServe. When we were about to phone our travel agent

or one of the hotels, we set up the spreadsheet, entered the file, and there was all the information needed. We inserted new lines or notes to keep track of possible hotels or attractions and to delete them if they didn't pan out. On the trip we carried a printout of the final version which showed phone numbers, addresses and confirmation numbers. We gave copies (with the money columns deleted) to our parents and neighbors so that they would know where to contact us during the trip in case of any problems.

By the way the vacation was wonderful. We all had a great time at the reunion. The trip down the East coast, stopping in little colonial towns, was wonderful. And we went over budget, but who cares?

Usedcar

Emanuel C. Hoover
R.R. 2, Box 172
Star City, IN 46985

The first program (Usedcar) is for an Extended Color BASIC Computer. If you have a printer it will output a hard copy. The program should work on a non-extended BASIC Color Computer up to the point where the program asks for "PRINTOUT(Y,N)". At that point a "N" will return the user to the beginning of the program.

The second program is a mailing label program we use with the Line Printer VIII.

USED CAR

```

10 CLEAR 500
20 CLS
   : PRINT "PURCHASE PRICE FOR COMPARABLE"
   : INPUT "NEW UNIT"; NP
30 PRINT "ESTIMATED REPAIRS FOR UNIT LIFE"
   : INPUT "BODY"; RB
   : INPUT "TIRES"; RT
   : INPUT "BATTERY"; RE
   : INPUT "MISCELLANEOUS"; RM
40 INPUT "EST. SALVAGE VALUE"; SV
50 R=RB+RT+RE+RM
   : TC=R+NP-SV
60 INPUT "LIFE EXPECTANCY IN MILES"; L
70 MC=TC/L
80 CLS
   : PRINT "TOTAL COST="; TC
90 PRINT "COST PER MILE = "MC
100 CLS
   : PRINT "EXPECTED LIFE OF USED UNIT"
   : INPUT "IN MILES"; RL
110 PRINT "EXPECTED REPAIRS FOR LIFE"
   : INPUT "BODY"; UB
   : INPUT "TIRES"; UT
   : INPUT "BATTERY"; UE
   : INPUT "MISCELLANEOUS"; UM
120 RU=UB+UT+UE+UM
   : UT=RL*MC
   : UV=UT-RU+SV
130 CLS
   : PRINT "TOTAL VALUE USED="; UT
   : PRINT "EXPECTED REPAIRS="; RU
   : PRINT "PURCHASE PRICE="; UV
140 INPUT "EXPECTED M.P.G.-NEW"; GN
150 INPUT "EXPECTED M.P.G.-USED"; GU
160 INPUT "EXPECTED FUEL PRICE"; GP
170 G1=(RL/GN)*GP
   : G2=(RL/GU)*GP
   : G3=G2-G1

```



```

180 CLS
  : PRINT ""
  : PRINT "FUEL COST FOR "; RL; " MILES"
  : PRINT "NEW UNIT = "; G1
  : PRINT "!USED UNIT = "; G2
  : PRINT "FUEL COST ADJUSTMENT="; G3
190 FB=UV-G3
  : PRINT " MAXIMUM FINAL BID="; FB
200 INPUT "PRINT OUT(Y, N)"; X$
210 IF X$="Y" GOTO 230
220 GOTO 20
230 A$="PURCHASE PRICE OF NEW UNIT"
  : A=NP
  : GOSUB 490
240 A$="PLUS EXPECTED LIFETIME REPAIRS"
  : A=R
  : GOSUB 490
250 A$="LESS ESTIMATED SALVAGE VALUE"
  : A=SV
  : GOSUB 490
260 A$="TOTAL COST NO FUEL"
  : A=TC
  : GOSUB 490
270 A$="ESTIMATED LIFE IN MILES"
  : A=L
  : GOSUB 490
280 A$="LIFETIME COST PER MILE"
  : A=MC
  : GOSUB 490
290 PRINT #-2, ""
  : PRINT #-2, ""
300 A$="EXPECTED LIFE OF USED UNIT IN MILES"
  : A=RL
  : GOSUB 490
310 A$="VALUE AT SAME PER MILE COST AS NEW"
  : A=UT
  : GOSUB 490
320 A$="LESS ESTIMATED REPAIRS"
  : A=RU
  : GOSUB 490
330 A$="PLUS ESTIMATED SALVAGE VALUE"
  : A=SV
  : GOSUB 490
340 A$="MAXIMUM BID WITH SALVAGE"
  : A=UV
  : GOSUB 490
350 PRINT #-2, ""
  : PRINT #-2, ""
  : PRINT #-2, "FUEL COST ADJUSTMENT"
360 A$="MILEAGE ESTIMATE NEW"
  : A=GN
  : GOSUB 490
370 A$="MILEAGE ESTIMATE USED"
  : A=GU
  : GOSUB 490
380 A$="FUEL PRICE ESTIMATE"
  : A=GP
  : GOSUB 490
390 A$="MILES USED FOR ADJUSTMENT"
  : A=RL
  : GOSUB 490
400 A$="FUEL COST NEW"
  : A=G1
  : GOSUB 490
410 A$="FUEL COST USED"
  : A=G2
  : GOSUB 490
420 A$="FUEL COST DIFFERENCE"
  : A=G3
  : GOSUB 490
430 PRINT #-2, ""
  : PRINT #-2, ""
  : A$="MAX BID BEFORE FUEL ADJUSTMENT"
  : A=UV
  : GOSUB 490
440 A$="FUEL COST ADJUSTMENT"
  : A=G3

```

```

  : GOSUB 490
450 PRINT #-2, ""
  : A$="MAXIMUM FINAL BID FOR EQUAL VALUE"
  : A=UV-G3
  : GOSUB 490
460 INPUT "ANOTHER COPY(Y, N)"; X$
470 IF X$="Y" GOTO 230
480 GOTO 20
490 PRINT #-2, USING "%
  : A$;
  : PRINT #-2, USING "####.##"; A
500 RETURN

```

Labels

```

5 CLEAR 500
10 CLS
  : PRINT "LABEL PROGRAM FOR LINE PRINTER VIII"
15 PRINT ""
20 PRINT " #1=ONE PAIR NEED NOT MATCH"
22 PRINT ""
25 PRINT " #2=NUM PAIR NEED NOT MATCH"
27 PRINT ""
30 PRINT " #3=NUM PAIR MATCHING"
32 PRINT ""
40 INPUT "PROGRAM NUMBER"; N
50 IF N>3 GOTO 40
55 IF N=1 GOTO 100
60 IF N=2 GOTO 300
65 IF N=3 GOTO 600
100 CLS
110 CLS
  : INPUT "NAME"; A$
120 INPUT "ADDRESS"; A0$
130 INPUT "TOWN"; A3$
140 INPUT "STATE"; A1$
150 INPUT "ZIP"; A2$
160 INPUT "NAME"; B$
170 INPUT "ADDRESS"; B0$
180 INPUT "TOWN"; B3$
190 INPUT "STATE"; B1$
200 INPUT "ZIP"; B2$
210 PRINT #-2, ""
220 PRINT #-2, " "; A$; CHR$(27); CHR$(16);
  CHR$(01); CHR$(02); " "; B$
230 PRINT #-2, " "; A0$; CHR$(27); CHR$(16);
  CHR$(01); CHR$(02); " "; B0$
240 PRINT #-2, " "; A3$; " "; A1$; " "; A2$;
  CHR$(27); CHR$(16); CHR$(01); CHR$(02); " ";
  B3$; " "; B1$; " "; B2$
250 PRINT #-2, ""
260 PRINT #-2, ""
270 GOTO 10
300 CLS
310 INPUT "NUMBER OF LABELS"; X0
320 CLS
  : INPUT "NAME"; A$
330 INPUT "ADDRESS"; A0$
340 INPUT "TOWN"; A3$
350 INPUT "STATE"; A1$
360 INPUT "ZIP"; A2$
370 INPUT "NAME"; B$
380 INPUT "ADDRESS"; B0$
390 INPUT "TOWN"; B3$
400 INPUT "STATE"; B1$
410 INPUT "ZIP"; B2$
420 PRINT #-2, ""
430 PRINT #-2, " "; A$; CHR$(27); CHR$(16);
  CHR$(01); CHR$(02); " "; B$
440 PRINT #-2, " "; A0$; CHR$(27); CHR$(16);
  CHR$(01); CHR$(02); " "; B0$
450 PRINT #-2, " "; A3$; " "; A1$; " "; A2$;
  CHR$(27); CHR$(16); CHR$(01); CHR$(02); " ";
  B3$; " "; B1$; " "; B2$
460 PRINT #-2, ""
470 PRINT #-2, ""

```

```

480 X=X+1
490 IF X>=X0 GOTO 510
500 GOTO 420
510 GOTO 10
600 CLS
610 INPUT "NUMBER OF LABELS"; X0
620 CLS
    : INPUT "NAME"; A$
630 INPUT "ADDRESS"; A0$
640 INPUT "TOWN"; A3$
650 INPUT "STATE"; A1$
660 INPUT "ZIP"; A2$
670 PRINT #2, ""
680 PRINT #2, " "; A$; CHR$(27); CHR$(16);
    CHR$(01); CHR$(02); " "; A$
690 PRINT #2, " "; A0$; CHR$(27); CHR$(16);
    CHR$(01); CHR$(02); " "; A0$
700 PRINT #2, " "; A3$; " "; A1$; " "; A2$;
    CHR$(27); CHR$(16); CHR$(01); CHR$(02); " ";
    A3$; " "; A1$; " "; A2$
710 PRINT #2, ""
720 PRINT G22, ""
730 X=X+1
740 IF X>=X0 GOTO 10
750 GOTO 670
760 GOTO 10

```

Computer Clubs

CALGARY COLOR COMPUTER CLUB
c/o David A. Logan
P.O. Box 453
Trochu, Alberta
Canada T0M 2C0

DAYTON COCO USERS' GROUP
c/o Joe Evans
609 Applehill Drive
West Carrollton, OH 45449

NORTHWEST COMPUTER CLUB
c/o Judy Gehman
E. 14012 Cataldo
Spokane, WA 99216

DEARBORN TRS-80 USERS GROUP
P.O. Box 2905
Livonia, MI 48150

Word Processing with the Coco and the TP-10

Warren E. Dugger, Jr.
20 Bruce Lane
Orange, TX 77630

Since getting my printer, I've been spending time on programs that put it to use. Most of us hate to write letters and when we do we run out of something to say or get interrupted.

This program allows for one hundred sentences of up to seven lines each (32 characters per line) and prints on the TP-10 printer and on the television screen the same way that

you type it. You indent for new paragraphs using . . . when desired.

If interruptions occur, then save the document to tape and when you are able to finish it load it from tape and print what you've already written. Then when you're finished you can have your printer print you a hard copy.

I purposely left everything variable in the hard copy subroutine for general use. With modification you can put a constant return address/salutation and closing.

Once you've tried the program, I'm sure you'll get the hang of it. I hope many of you out there will find it useful.

```

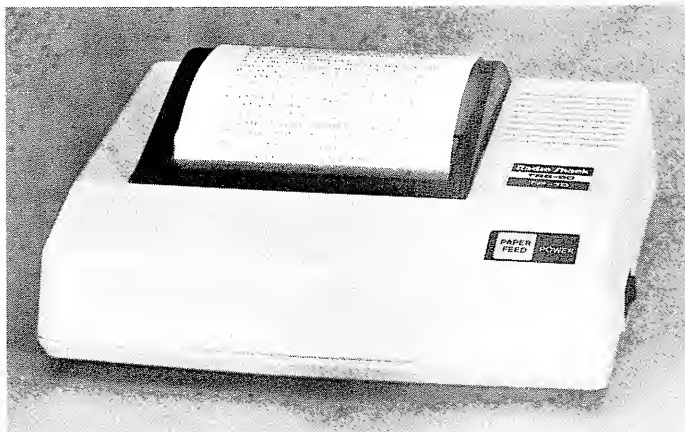
5 CLEAR 5000
    : DIM P$(100)
10 CLS
    : 'LETTER
20 PRINT@41,"WRITE A LETTER"
30 PRINT@97,"(1) BEGIN LETTER"
40 PRINT@164,"(2) ADD TO LETTER"
50 PRINT@231,"(3) PRINT ON SCREEN"
60 PRINT@298,"(4) SAVE TO TAPE"
70 PRINT@365,"(5) LOAD FROM TAPE"
80 PRINT@432,"(6) HARD COPY"
90 INPUT "MAKE YOUR SELECTED FUNCTION";M
100 IF M<1 OR M>6 THEN 10
110 ON M GOSUB 1000,1000,3000,4000,5000,6000
120 GOTO 10
1000 CLS
    : IF M=2 THEN 1020 ELSE PRINT@10,"BEGIN LETTER"
1010 Y=1
1020 IF M=2 THEN PRINT@8,"ADD TO LETTER"ELSE GOTO
    1030
1030 PRINT@34,"PRESS <ENTER> WHEN FINISHED"
1040 PRINT"SENTENCE-";Y;"TYPE LEADING ...FOR
    PARAGRAPHS"
1045 LINE INPUT P$(Y)
1050 IF P$(Y)="" THEN RETURN
1060 Y=Y+1
    : GOTO 1040
3000 CLS
    : FOR X=1 TO Y-1
3010 PRINT P$(X);"-";X
3020 PRINT
    : PRINT "PRESS C TO CONTINUE R TO RETURN"
3025 SCREEN 0,1
3030 Z$=INKEY$
3040 IF Z$="C" THEN 3060
3050 IF Z$="R" THEN RETURN ELSE 3030
3060 NEXT X
3070 RETURN
4000 CLS
    : PRINT@170,"SAVE TO TAPE"
4010 PRINT@234,"POSITION TAPE"
    : PRINT@299,"PRESS PLAY"
    : PRINT@388,"PRESS <ENTER> WHEN READY"
4020 INPUT R$
4030 OPEN "O",-1,"LTR"
4040 FOR X=1 TO Y-1
    : CLS
    : PRINT P$(X)
    : PRINT#-1,P$(X)
    : NEXT X
4050 CLOSE #-1
    : RETURN
5000 CLS
    : PRINT@170,"LOAD FROM TAPE"
5010 PRINT@235,"REWIND TAPE"
    : PRINT@300,"PRESS PLAY"
    : PRINT@388,"PRESS <ENTER> WHEN READY"
    : INPUT R$
5020 OPEN "I",-1,"LTR"
5030 Y=1
5040 IF EOF(-1) THEN 5080
5050 INPUT#-1,P$(Y)

```

```

5060 CLS
: PRINT Y
: PRINT P$(Y)
: Y=Y+1
5070 GOTO 5040
5080 CLOSE#-1
: RETURN
6000 CLS
: PRINT"TYPE RETURN ADDRESS,DATE, AND
SALUTATION AS YOU WISH IT TO BE PRINTED. YOU
HAVE SEVEN LINES."
: PRINT
6010 LINE INPUT RA$
6020 PRINT "PRESS C TO CHANGE-P TO PRINT"
6030 Z$=INKEY$
6040 IF Z$="C" THEN 6000
6050 IF Z$="P" THEN 6060 ELSE 6030
6060 CLS
: PRINT#-2,CHR$(26)RA$
: PRINT RA$
6070 FOR X=1 TO Y-1
: PRINT P$(X)
: PRINT#-2,P$(X)
: NEXT X
: PRINT#-2,CHR$(13)
6080 PRINT
: PRINT"TYPE CLOSING AS YOU WISH IT TO PRINT.
YOU HAVE SEVEN LINES."
6090 LINE INPUT C$
6100 PRINT "PRESS C TO CHANGE-P TO PRINT"
6110 Z$=INKEY$
6120 IF Z$="C" THEN 6080
6130 IF Z$="P" THEN 6140 ELSE 6110
6140 CLS
: PRINT C$
: PRINT#-2,C$
: PRINT#-2,CHR$(13)
6150 PRINT "TYPE POST SCRIPT AS YOU WISH IT TO PRINT.
YOU HAVE SEVEN LINES. IF YOU NEED MORE THAN THIS
THEN IT SHOULD HAVE BEEN IN THE MAIN BODY OF THE
LETTER."
6160 LINE INPUT PS$(1)
: GOTO 6170
6165 LINE INPUT PS$(2)
6170 PRINT "PRESS C TO CHANGE-P TO PRINT OR S FOR
YOUR 2ND POST SCRIPT.(FELT SORRY FOR YOU! SEVEN
MORE LINES)"
6180 Z$=INKEY$
6190 IF Z$="C" THEN 6150
6200 IF Z$="S" THEN 6165
6210 IF Z$="P" THEN 6220 ELSE 6180
6220 CLS
: IF PS$(1)="" THEN RETURN ELSE PRINT#-2,PS$(1)
: PRINT PS$(1)
6230 IF PS$(2)="" THEN RETURN ELSE PRINT#-2, PS$(2)
: PRINT PS$(2)
6240 RETURN

```



Bugspray

Dean Hildebrandt
30 Lincoln Lane
Simsbury, CT 060670

This is a game for the Color Computer, where you get a chance to spray those pests that bother you all spring/summer, bugs! The higher your level, the faster the bug flies around. When you press the spacebar, the bug stops and the spray goes off. See how few sprays it takes you to zap the bug. If you get under five go to the next level, but if you get more than thirty go back to the level before.

```

1 CLS
2 GOSUB 100
3 INPUT"LEVEL";A$
: GOTO 60
5 CLS
7 FOR I=0 TO 127
: SET(I, 47)
: NEXT I
8 FOR I=62 TO 63
: SET(I, 45)
: SET(I, 46)
: NEXT I
10 A$=CHR$(157)+CHR$(158)+CHR$(173)+CHR$(174)
20 A=RND(956)-1
: PRINT @A, A$;
: FOR J=1 TO R
: IF INKEY$="" NEXT J
: PRINT @A, " ";
: GOTO 20
30 FOR I=14*64+31 TO 31 STEP -64
: IF PEEK(I+15360)<>32 GOTO 40
: ELSE PRINT @I, CHR$(143);
: PRINT @I, " ";
: NEXT I
: GOTO 50
40 CLS
: PRINT "IT TOOK YOU";B+1;"TRIES!!!!!"
: GOTO 500
50 B=B+1
: PRINT @A, " ";
: GOTO 20
60 IF A$="B" R=70
: GOTO 5
65 IF A$="P" THEN R=100
: GOTO 5
70 IF A$="I" R=60
: GOTO 5
80 IF A$="E" R=40
: GOTO 5
90 GOTO 3
100 PRINT TAB(27);"BUGSPRAY IN BUGSPRAY THERE IS A
BUG FLYING AROUND OVER YOU AND YOU HAVE TO
SQUIRT IT IN THE FEWEST SPRAYS YOU CAN. TO
SPRAY PRESS ANY KEY. WHEN YOU HIT IT, THE
COMPUTER TELLS YOU HOW MANY SPRAYS YOU USED."
101 PRINT " UNDER FIVE IS GOOD, BUT OVER THIRTY
ISN'T GOOD AT ALL.";
110 PRINT @960, "PRESS ANY KEY TO CONTINUE";
: FOR I=1 TO 1
: IF INKEY$="" THEN I=I-1
111 NEXT I
120 CLS
: PRINT " THERE ARE FOUR LEVELS OF SKILL P:
PREBEGINNER B: BEGINNER I: INTERMEDIATE E:
EXPERT EACH LEVEL IS HARDER THAN THE ONE
BEFORE, BUT EASIER THAN THE NEXT ONE."
: RETURN
500 PRINT "PLAY AGAIN?"
510 A$=INKEY$
: IF A$="" THEN 510
520 IF A$="Y" THEN RUN ELSE IF A$<>"N" THEN 510

```


When You Need Computer Repair Service

by Tom King

Computer service considerations are often overlooked by the novice computer user. "Computer pro's" recognize that a minimal understanding of computer service can minimize downtime as well as reduce time delays in getting the equipment serviced.

The following items are simple, yet often overlooked ways of minimizing or even preventing computer failures.

PREVENTING DOWNTIME (OR "AN OUNCE OF PREVENTION . . .")

The proper environment - Dust and airborne particles present a hazard to mechanical parts of the system: printers, disk drives, keyboards, etc. Computers are most comfortable when you are. Avoid excessive humidity, and avoid temperature extremes, especially high temperatures. Dust covers provide excellent insurance for the equipment when it is not in use. Position the equipment to allow adequate airflow. Hard disk drives are sensitive to bumps and spills. Place them in an appropriate and sturdy place.

User maintenance - The use of disk drive head cleaning kits helps prevent service calls caused by dirty drive heads. The cleaning procedure is quick and easy. Low humidity and certain carpets may produce static electricity. Application of anti-static spray and use of anti-static mats in the work area can reduce unnecessary service expenses. Check the Owners Manual for specific instructions for maintenance on all equipment.

Application Familiarity - Take the time to learn the applications of the equipment and programs. Before calling for service, be certain the failure is in the hardware and not due to a lack of understanding of the application. A daisywheel printer is not necessarily broken because it will not print boldface. The program driving the printer must send the correct codes to the printer to allow it to boldface print. If you're not certain if the equipment is malfunctioning, ask an expert. The store or Customer Services may be able to assist in making the correct decision.

Be Prepared! - Make backups, make backups, make backups! No one can predict if or when a failure may occur. Getting equipment serviced need not be traumatic, especially if you are prepared. Losing a month of work because there were no backup copies starts things off on the wrong foot!

COMPUTER SERVICE (ELEMENTARY, MR. WATSON)

The "little" computer on the desk is still as complex as ones that two decades ago filled an entire room. The computer service technician in many ways plays the role of a

detective. Proper clues aid in prompt problem identification and servicing of the equipment.

Prior to obtaining service, take the time to line up the clues. - Be certain that all equipment that could be involved in the problem is given to the service center (or identified if on-site service). This includes all peripherals and connecting cables. If you are not sure what should be included, ask the store before making the trip to the service center.

Document facts pertinent to the failure. - What program was in use, what was the program doing, what error codes were reported? These facts will aid the technician in making a faster and better determination of what is required to restore the equipment to proper operating conditions. The end result is less downtime required and a higher confidence in the service.

WHAT TO EXPECT FROM SERVICE (OR NO ONE LIKES A NASTY SURPRISE)

You have your work backed up so you can rest easy. If your application is time critical you may even have a backup system in place and work is continuing normally. Now that all the necessary equipment is ready for service what should you expect? The next step is to take the equipment in for service.

What will it cost? - Within the equipment warranty period, there is no charge for any necessary service (except in cases of fire, flood, and other disasters). For equipment that is out of warranty, the store can tell you the labor charges ahead of time that will apply to the equipment. For example, the labor rate for the RS232 communications interface in a Model 4 is \$15.00. Any parts used will be charged in addition to the labor charge. Obviously, this charge cannot be determined until the equipment has been worked on. If you really need to know the total charge . . .

Getting an Estimate - The Service Center will provide an estimate that includes parts and labor charges on request. In this case, the equipment will be examined and you will be notified of the estimated charges necessary to return the equipment to original operating specifications. At the time of notification you may elect whether or not to have the service performed. When you accept an estimate, the cost of repair will not exceed the estimated amount. If for any reason the cost would exceed the estimated amount, you will be notified and can choose whether or not to have the service done. Should you opt not to have service done after being notified of the estimated cost, the only charge that applies is a "checkout" charge. The store can tell you what this charge is for the equipment being serviced.

(Continued on page 19)

CompuServe Announces the Executive Information Service

Editor's Note: The CompuServe Consumer Information Service is one of the largest information and entertainment services available to owners of personal computers and computer terminals. With each issue of TRS-80 Microcomputer News, various features of The Consumer Information Service will be discussed. The Consumer Information Service is sold at Radio Shack stores nationwide and in Canada.

Now, for people with a serious interest in business information, CompuServe offers The Executive Information Service. The Executive Information Service is organized for the business user, highlighting investment information, communications, news and travel. In addition to providing access to the Consumer Information Service, The Executive Information Service offers a number of new products and enhanced capabilities with more on the way.



InfoPlex is an electronic mail system which provides immediate message delivery to subscribers and two-day delivery to nonsubscribers through E-COM, the U.S. Postal Service's Electronic Mail facility.

For investors, The Executive Information Service provides Ticker Retrieval, an easy cross reference of all information available for any company you specify, true 20 minute delayed stock quotations during the day and MicroQuote II, an updated and enhanced version of the already successful MicroQuote system provided through the Consumer Information Service. One of the new features of MicroQuote II is a screening capability which allows you to search for securities based on various investment criteria.

Business planners will be interested in The Executive Information Service's demographic information. Detailed demographic data and sales potential information is provided for every zip code in the United States.

Coming to the Executive Service Jan. 1 will be the Executive News Service. This service will allow you to screen the information coming across the AP News Wires for stories containing "key phrases" in which you are interested.

The Executive Information Service displays much of its information in an easy-to-read report format which features "wide mode" display. CompuServe recommends using terminals capable of at least 64, and preferably 80, character display to take full advantage of the reporting capabilities.

For more information, call CompuServe at 800-848-8199 (in Ohio call 614-457-0802).

Questions and comments about the CompuServe Information Service can be sent to Richard A. Baker, editorial director, or Jacqueline A. Farthing, assistant editorial director, CompuServe Information Service, 5000 Arlington Centre Boulevard, P. O. Box 20212, Columbus, Ohio 43220 or through Feedback, main menu item 5, CompuServe User Information.

Computer Service

(From page 18)

How Long Should It Take? - Typically, the time the equipment must be in the Service Center is minimal, usually one to two days. Where applicable, transit time to and from the Service Center will need to be taken into consideration. Store personnel can give you a good idea of how long to expect. If you have a time critical application, it may be a good idea to investigate a Carry-In or On-Site Service Contract as well. Store personnel will be happy to fill in the details.

What About Parts Used? - The Service Center will return any defective parts that are replaced by the Service Center providing you request they be returned when the equipment is pre-

sented for service. Certain assemblies such as disk drive mechanisms and certain logic board assemblies are replaced on an exchange basis. In these cases, instead of paying the price for a new assembly, you are charged for an assembly that has been rebuilt to factory specifications. The price is considerably lower and reflects rebuild costs. If you still would like all parts returned, regardless of exchange value, notify the store of your intentions when the equipment is presented for service. Beware that forfeiting the exchange program may elevate parts charges significantly.

Remember - You'll find your work will benefit from being prepared prior to having a failure, and getting equipment serviced will be much easier this way!

Bugs, Errors, and Fixes

LETTER CORRECTIONS TO SOFTWARE

Following are brief descriptions of problems to be fixed in specific software packages and the dates of letters that were sent to all registered owners containing the corrections to the problem.

If you are a registered owner of a software package described below and have not received the letter detailing the software problem and its correction, then contact your nearest Radio Shack Computer Center or Computer Customer Services. If you have not registered and are a legal owner of the software, you need to register by sending in the card that came with the package.

MODEL I/III/4

MODEL I/III PAYROLL (26-1556 Vers. 03.01.00)

Modifications have been made to include FICA changes and changes in the W-2 form.

Letter dated: June 20, 1983

MODEL I/III SUPERSCRIPSIT (26-1590 Vers. 01.00.00)

Changes made include the addition of several new printer drivers, additional documentation, the inclusion of a patch file to enable SuperSCRIPSIT to run on LDOS Hard Disk (Model III only), and several modifications to SuperSCRIPSIT and the SCRIPSIT Proofread program.

Letter dated: June 20, 1983

MODEL III SUPERSCRIPSIT (26-1590 Vers. 01.02.00)

Corrections are for the Model III SuperSCRIPSIT only. While doing a merge, SuperSCRIPSIT fails to recognize the first line of a paragraph for indentation purposes.

Letter dated: July 13, 1983

MODEL II/12/16

MODEL II ACCOUNTS PAYABLE (26-4505 Vers. 02.00.00)

The changes correct the APCHECKS/BAS program so that unequal page lengths do not occur during printing of check preview and check register.

Letter dated: March 7, 1983

MODEL II/16 ACCOUNTS RECEIVABLE (26-6204 Vers. 02.00.00)

In order to operate under the XENIX Operating System, the data files should be modified so that an ERROR 94 does not occur when some modules of AR are entered. For those who have not converted to the XENIX Operating System, there is a modification for the "convrtar" module contained on the ACCOUNTS RECEIVABLE XENIX Upgrade diskette.

Letter dated: March 22, 1983

OTHER CORRECTIONS

The following changes and corrections are optional and provided for your information. If you have an applications program which is working correctly, you should probably NOT make any changes to it. If you feel that changes should be made, but you do not feel qualified to make the change yourself, contact your local Radio Shack Computer Center or Expanded Computer Department for assistance. If you do not have access to one of these stores, then you may want to call Computer Customer Service in Fort Worth for assistance.

MODEL I/III/4

MODEL I/III ACCOUNTS PAYABLE (26-1554 Vers. 03.01.00)

In some instances, the program is printing over the top of preprinted information on the remittance advise and on the check itself using Trinity Forms 720-0107. The following changes are optional.

Load the CHECKS program into the computer and make the following changes.

To eliminate printing of company name and check number on stubs, change line 169 to read:

```
169 LPRINTL1$
      : GOSUB319
      : LPRINTL1$
      : LPRINTL1$
      : LPRINTL1$
      : RETURN
```

To eliminate printing of check numbers on checks, change line 173 to read:

```
173 FOR W2=1 TO 20-PEEK(16425)
      : LPRINTL1$
      : NEXT
      : IF NT#<0 THEN GOTO 271 ELSE LPRINT" ";TI$;
      TAB(30) USING F3$;GT#;
      : LPRINT TAB(44) USING F3$;DT#;
      : LPRINT TAB(62) USING F3$;NT#
      : LPRINT L1$
      : LPRINT L1$
      : LPRINT TAB(63)TI$
      : LPRINT L1$
      : LPRINT L1$
      : LPRINT L1$
      : LPRINT L1$
      : LPRINT L1$
```

Type SAVE "CHECKS" to save the changes in the program. At TRSDOS READY, make a backup copy of the corrected diskette.

MODEL III PAYROLL (26-1556 Vers. 03.02.00)

The changes are optional for the State of Georgia only. Backup the diskette(s) and make the changes on the Backup copy of the program.

First, set up the Georgia State Tax Table in the following order:

- Table 1—Single.
- Table 2—One spouse working.
- Table 3—Unmarried head of household.
- Table 4—Married, filing separately or filing joint (both spouses working)

For the question "Is your standard deduction a percent of gross pay?", answer "Y" and enter "15" for percent.

After completing "merge", in BASIC load the program by typing LOAD "PR4INPUT". Make the following corrections:

```
5190 J=18/100*G#
: IF J<1700 THEN J=1700 ELSE IF J>3000
THEN J=3000
: REM
5370 J=18/100*G#
: IF J<850 THEN J=850 ELSE IF J>1500
THEN J=1500
: REM
```

Type SAVE "PR4INPUT" to save the changes in the program. At TRSDOS READY, make a backup copy of the corrected diskette.

MODEL I/III ADVANCED STATISTICAL ANALYSIS (26-1705 Vers. 03.00.01)

In the Time Series Analysis 2 Program, line 180 incorrectly states: GOTO 1343. There is no line 1343 in the program. This will cause an error only if the wrong type of data tape is being read. It does not affect the normal operation of the program.

In order to correct the program, place the TIME SERIES ANALYSIS 2 Program in the cassette recorder and in BASIC load the program by typing CLOAD. Retype or edit line 180 to read:

```
180 PRINT
: PRINT "WRONG DATA FILE TYPE"
: PRINT
: M6=4
: GOTO 1000
```

Type CSAVE "T" to save the changes in the program.

MODEL III FORTRAN (26-2200)

Publication change notice: In the Quick Reference section, change the definition of CALL OUT to read:

CALL OUT(port,byte)
Directs output to the I/O ports.

MODEL II/12/16

MODEL II INVENTORY MANAGEMENT (26-4502 Vers. 01.01.00)

The quantity on hand and dollar amount of inventory display fields are not large enough. To enlarge these display fields, execute the following OPTIONAL changes. Be sure to backup the diskette(s) and make the changes on the Backup copy of the program.

In BASIC load the program by typing LOAD "ORDER/BAS" and retype or edit the following lines to read:

```
83 P1$="#####"
: P2$="#####.##"
```

```
: LL$=STRING$(79,"-")
: LS$=STRING$(79,"_")
```

```
3410 P3$=P1$+" COST :"+P2$
```

Once you have retyped or edited these lines, type SAVE "ORDER/BAS" to save the changes in the program. At TRSDOS READY, make a backup copy of the corrected diskette.

After these changes have been applied, the version number will be 01.01.01. Please make the necessary entry in your Version Log.

MODEL II ACCOUNTS PAYABLE (26-4505 Vers. 2.0 & Prior)

For pre-printed checks only, the check number needs to increment for voided checks. To apply this OPTIONAL correction, backup the diskette(s) and make the changes on the Backup copy of the program. In BASIC load the program by typing LOAD "APCHECKS/BAS". Retype the following line (or refer to the Edit section of the owners manual).

```
2060 IC=IC+1
: IF IC=14 THEN LPRINT L1$
: GOSUB 8000
: IC=0
: CF=0
: LC=LC+1
```

Add the following line.

```
3075 IC=IC+1
: IF IC=15 THEN LPRINT " "
: LPRINT LL$:LPRINT "***** CHECK NUMBER
";CN;" VOIDED ***** - CONTINUED ON CHECK
NUMBER ";CN+1
: LPRINT LL$
: CN=CN+1
: IC=0
```

After you have checked the lines for accuracy, type SAVE "APCHECKS/BAS" to save the changes in the program. At TRSDOS READY, make a backup copy of the corrected diskette.

MODEL II PROFILE (26-4512 Vers. 01.01.00)

A problem will occur if you try to FCOPY Profile II to Hard Disk when the Hard Disk already has a program such as Time Accounting. Time Accounting has as file "M" on it and when you try to FCOPY Profile II to a Hard Disk containing this program, the error message "FILE ALREADY EXISTS COPY OVER IT (Y/N/Q)" appears.

The following "OPTIONAL" patches are to change the name of the menu from "M" to another single character. The "x" in the patches is to be replaced with the new single character menu name. For example, patch DIR/EFC A=4817 F="M" C="x" would be applied as DIR/EFC A=4817 F="M" C="Z" to change the menu name to Z.

```
PATCH DIR/EFC A=4817 F="M" C="x"
PATCH CREATE/EFC A=55F0 F="M" C="x"
PATCH CREATEX/EFC A=4D46 F="M" C="x"
PATCH LPFORM/EFC A=5113 F="M" C="x"
PATCH LBFORM/EFC A=4D94 F="M" C="x"
PATCH FIELDER/EFC A=4F05 F="M" C="x"
PATCH EXPAND/EFC A=3C0D F="M" C="x"
PATCH CLERK/EFC A=5736 F="M" C="x"
PATCH PRINT/EFC A=5228 F="M" C="x"
PATCH LABEL/EFC A=5596 F="M" C="x"
PATCH SELECTOR/EFC A=56DB F="M" C="x"
```

Communications Corner

by Al and Dru Simon

Hello, and welcome back to Communications Corner and a brand new year!

This month's issue is all about getting started and since we have received so many letters asking what one needs to start a bulletin board, we thought our choice of subject this month was obvious. Let's talk about it.

Naturally the first thing one needs for a computer Bulletin Board Service is the computer. Our own BBS, DRUCOM, is run on a fully expanded Model 1. This is by no means the only choice; for example Aphrodite East in New Jersey is run quite efficiently on a Model 3 and last month's letters mentioned Big Top which is run on a Model 2.

We would not suggest buying a machine specifically for the purpose of creating a bulletin board unless you are entirely dedicated to the idea because it is far less lucrative a venture than one might think at first. The purchase ratio for BBS callers is about the same as any other mail order type business; about 1% actually buy something and pricing is extremely competitive on computer related items. If you can come up with a new service or product, you might do better; but all in all it may be unwise to dedicate a financial investment in computers thinking you're going to make money "hand over fist." It just doesn't happen!

All right, you've got your computer sitting by itself on a nice clean desk or table. Let's fill in the blanks next to it. The next most important thing you'll need is disk drives. Naturally some computers have drives already installed, which is an advantage. We have found that a minimum of two drives is needed to comfortably accommodate a BBS, although we recommend more (or hard disk) to allow for storage of extra features and messages, etc. The capacity of your drives is really up to you. If you're thinking of a very basic type of BBS you may not need a great deal of memory; DRUCOM for example carries five message areas (a total of 295 messages!), two separate sales catalogues and three separate categories of programs for downloading. We happen to use one single sided and two double sided double density drives, but we carry significantly more than most privately owned bulletin board services!

Next, we find it convenient to use a printer to make hard copy of the records of our callers and their activities. We find this very useful for many reasons. By having a message printed in hardcopy about every activity each caller indulges in, we can tell if a certain area of the board is not being used and may decide to delete or change that area. By keeping track of which programs are downloaded by callers, we know what type our callers are interested in. If someone donates a program but has forgotten to install a program line with his name on it, we can still trace back to the person and thus give him or her the credit due for the donation. In this way we keep entirely on top of our board and the areas that callers are

interested in. In this manner we are also aware of who leaves which messages and are able to make sure that names get spelled correctly. If an addressee name does not match a caller name precisely, the recipient will never be notified of a message waiting for him.

We use a Line Printer 4 on DRUCOM (old but reliable) which is totally dedicated to our board. Any printer will do the job; you need not get anything too ornate or expensive. Some boards store their caller data on a spool and dump it periodically to a printer. Whichever way seems most convenient to you is certainly the way you should go.

Another piece of hardware that DRUCOM uses is an external clock mechanism to accurately inform the sysop and the callers of the time and duration of each visit, and for precise facilitation of the timed activities on the board, such as game playing and downloading. We have found that if we do not allot a certain time limit to these areas callers will remain there for very excessive amounts of time without even realizing it. With the volume of calls that boards receive it is often wise to install such limitations. The callers are generally happy to comply since in the long run you are saving them telephone bill money!

Naturally an important piece of equipment which every bulletin board needs is a reliable MODEM. You may choose any variety you like. DRUCOM uses a simple 300 baud device, although callers tend to be a bit happier if you offer them the option of both 300 and 1200 baud. Do realize that the cost of the MODEM goes up significantly should you opt for 300/1200, but the choice is entirely up to you. Please be cautious with your modem. A strong electrical charge such as lightning hitting your line can ruin your modem, and we recommend that if possible you not only turn off your bulletin board if you are in the middle of a thunderstorm, but disconnect your modem from the phone line as well.

As to telephone lines which you wish to devote to your BBS, you have two real choices. First, you may have a line installed which will be entirely devoted to the BBS, which incurs "Ma Bell's" costs of installation and the extra monthly cost of the phone service itself. The other option is to make it known that your voice line will be available for the BBS at certain hours only and that callers should dial via voice line first and then call back while you turn on your modem. We prefer the first choice even though it effectively costs more. The reasons are simple; we get so much traffic at all hours of the day and night that we would never ever be able to call out or receive any calls but BBS users! Also it isn't much fun when someone who works at night calls at 4AM wanting to be connected to your BBS. Even if you let it be known that your computer is only available during certain hours you can pretty well expect people to forget and to call at their convenience, not yours. We also prefer the direct connect type

modem for the same basic reasons. We find the connection more reliable and certainly less trouble for us.

We also recommend having a telephone connected to the line as well, in case for some reason you either have to use that line to make a call or feel you must speak voice to voice with a caller. If you and your caller both pick up your phones and disconnect your modems within a short time of each other, the phone call will not be disconnected although the COMPUTER connection will terminate. We often speak to our callers in this manner, especially when a subject of discussion arises that takes more time than typing will readily allow.

There is another reason we like to have a phone connected to the line. When we do our updating work on the board we don't call it from another computer; we just run the board on the same computer the system resides in. Thus we would have to turn off the modem in order to use DRUCOM. Callers tend to get upset when they've gotten 47 straight busy signals and then, when they finally get through to the number, it doesn't answer! (Well, you'd get upset too; we know we would!) We've often gotten calls on our voice line asking if there's something wrong with the bulletin board! We have found a simple solution in attaching a phone to our data line and simply taking it off the hook when we wish to update our files and do our daily backups etc.

The last piece of actual hardware you must consider is the cost of diskettes. What? Diskettes are like nothing in comparison to the rest! Well that appears to be true, but consider that you will be using them CONSTANTLY for long periods of time. DRUCOM accesses diskettes about as constantly as any board in the country (more than some) and we find that we start getting parity errors after about a month of usage. Therefore we not only keep backups of our disks in case of emergency, we must also create an entirely new set of disks about once every month. That doesn't seem like much really, but it's a constant overhead cost which must be recognized. Good quality, reliable diskettes should be used to ensure good copies and no loss of data.

Well, so much for hardware. Now for the "heart" of the BBS, the software. There are many BBS packages available for sale and some for free. The costs of these programs varies greatly, and the type you choose depends on what you wish to make of your board. We recommend visiting various networks to see which type with which you will feel most comfortable. Most have variations on the same basic options, although the manner in which they approach handling the options varies. These options are usually a message area, a userlog (list of callers), the capacity to download or upload public domain software, a "chat" mode whereby the caller can converse with the sysop (you, the system operator), a game-playing area, a list of public interest bulletins, and very often a sales catalogue. Some have variations on these such as theme discussion areas where the caller may choose the topic of the messages he/she wishes to read. Some provide matchmaking services (there is an entire network devoted to this pursuit) and there are even boards devoted to computer piracy, although obviously these are somewhat less "respectable".

If you are really courageous and very able at programming, you might wish to attempt creating your very own BBS software. This is excellent practice for programming skills and will be both challenging and rewarding. But heed a word of caution. In any BBS package, SECURITY is a must! There are

young programmers across the country who delight in trying to break out of BBS programs for the purpose of either fooling around with your software or having your drives reformat your disks, thus destroying your hard work! (This is an excellent example of the importance of making frequent backup copies of your working disks!)

If you wish to try your hand at creating your own system, we recommend you become familiar with both BASIC and MACHINE LANGUAGE, not only to create the system but to debug and troubleshoot. You will find that no matter how excellent the software you buy or create, bugs will appear as if by magic (or spontaneous generation, we're not sure which). You'll find it much easier to be able to troubleshoot the bugs yourself than to have to phone the headquarters of your network for help with your program.

Indeed, some network headquarters will not support their members at all once the checks for the BBS software have cleared. This is a practice we find questionable, but it is a consideration that the prospective BBS sysop must consider. It is always wise to consult non-headquarter members before you purchase a program to see how they have fared when they needed help!

We will not delve into the complexities of the programs themselves, as they vary so very much from board to board, but the basics are fairly simple. The one basic piece of software that every board needs is a host program which will allow your computer to be operated by a remote terminal. Any other feature you wish your board to have is secondary and can be "hitched up" at a later date. These may be message storing and retrieving areas, chat area, down and uploading areas, and so forth, as we mentioned above.

The last and perhaps most important thing you must have in order to successfully run a BBS is PATIENCE. Boards take a lot of time and attention, both in upkeep and repair. We actually had the experience of a nearby thunderstorm sending a huge electrical charge through our phone wires that not only destroyed some of the data on our disks, but "fried" our modem!

On a more ordinary note, files that change frequently, such as messages from one caller to another, must be backed up daily. General interest bulletins must be changed and updated, menus of downloadable programs must be rotated periodically, and you must answer any messages addressed to you, as well as keep your callers informed of things you wish them to know, such as the INSTRUCTIONS on to how to operate your system! You must create the atmosphere you wish your board to reflect, and you must work to keep it on the right track.

You must also have patience and understanding towards your callers. Many will wish to chat with you and they have no way of knowing that you've just sat down to supper or are tightening a tourniquet or stepping into the shower. They expect you to be helpful and happy, because it's a treat for them to speak with you. They also have no way of knowing that you have just had seven consecutive conversations with callers, all of whom wanted to tell you about their mothers-in-law or their last dentist appointments (no, it isn't actually that bad, but exaggeration does make the point). It is sometimes hard to maintain your cheerfulness, especially if you're ill, or upset (see the reference to the tourniquet above) or on your way out the door. You must always try to be as pleasant as possible. It's part of the job.

You'll also find that you create a number of lasting friendships on your board and can look forward to some honestly fascinating conversations. These contacts make the effort worthwhile; these and the termination messages which laud your work and express thanks and praise for your system. We must admit it's also fun to be able to read all the messages and expand your collection of programs through caller donations. Yes, there are rewards but generally speaking they are not pecuniary.

So there you are. Those are the basics. What will make your board special and exciting is the one factor we can't explain in this column—the sysop. Ultimately it is your own personality that makes your board unique. We suggest that you infuse your board with who you are and what you believe. In this way, though you may be one of a huge network of bulletin board programs that all look alike, yours will have something special, something that nobody can duplicate—You, Yourself.

Good luck!



THE NEWS FROM PLUMB

Here are a few newsy remarks from our friends at PLUMB:

Tom Lough and some folks in the Charlottesville, VA area are trying to start a bulletin board for people interested in the LOGO computer language. His first task is finding the right software. If you wish to help, write to the National LOGO Exchange, P.O. Box 5341, Charlottesville, Va 22905.

The Computer Emporium . . . in Louisville, KY has jumped into the BBS arena in a big way. The board, called Baud-Ville, uses a 20 meg hard disk for storage, giving it room for more than a dozen special interest groups. Call 502-423-0695 evenings or weekends.

Reports that Rev. Apple, the marrying computer run by Ron Jaenisch in Sunnyvale, Cal, would be available online appear to be a bit premature. Jaenisch, a minister ordained by the Universal Life Church, had programmed his computer to perform a marriage ceremony. A few months ago a national wire service reported that would be soon accessible to a national audience. But Jaenisch told PLUMB that it never happened. The tremendous response—five couples used the marriage program—just wasn't enough to justify national distribution. Instead, Jaenisch has turned his attention to a new program, Comp-U-Pray, which writes a prayer that incorporates the user's personal religious beliefs.

Our thanks and greetings to Ric Manning at Riverside Data Inc. for his permission to use these items from PLUMB. If you wish to contact PLUMB, their address is P.O. Box 300, Harrods Creek, KY, 40027. Phone 502-228-3820; CompuServe account 72715,210; Source account STQ007.

THE CORNER MAILBOX

Dear Al and Dru

Can you tell me 1) How I can program my Videotex Plus or modem to redial when I get a busy signal and 2) I have MCI and cannot seem to be able to Autolog on with it.

**Hal Burke
Glen Burnie, MD**

Dear Hal:

As sysops of a BBS we must admit that we have some objections to auto-redial programs because too often a caller sets up his machine and goes and takes a nap (or something). We walk past the BBS and see it stuck on "Are You A TRS80?" (the very first thing that the caller sees when he gets connected to DRUCOM) for several minutes. That isn't fair to other callers, so if you're going to use a redial program PLEASE STAY WITH IT!!!

As to your question, according to my Videotex 3.3 manual, pages 2 and 3, there appears to be no way to do what you suggest using only Videotex without modifying the program. However, we suggest you write your own MACHINE LANGUAGE or BASIC program (machine language preferred because of speed) which will do your auto dialing and then check for carrier (e.g. from Basic, IF INP (232) > 200 THEN (GO BACK TO DIALING LOOP)). This will test for carrier at both 300 and 1200 baud.

If you'll reference our May and June articles you'll see how to control each signal which you will need to do your dialing. We will try to publish a program such as this in the near future; however, the signals needed to control your modem should be found in your modem manual as each modem requires different signals.

As to your problem with MCI, please refer to the Videotex manual, pages 2 and 3, paying particular attention to the example shown on page 3 and the use of the word PROMPT. That should cure your problem.

Dear Al & Dru:

I used to call a board called Aphrodite East in Haledon, NJ, but the number doesn't work anymore. I heard they were still online. Do you know their new number?
Thank you.

**Joan Werthman
New York, NY**

Dear Joan:

Your letter was one reason that we mentioned them in the article above. Aphrodite East is still online 24 hour per day, seven days per week. Their phone number is no longer in Haledon, since the sysop moved. The new number is (201)-831-1042. They operate at 300 baud, 8 bit word, 1 stop bit with disabled parity.

Thank you for asking!

That wraps us up for another month. We look forward to another year of your letters and comments, and hope you will continue to stay with us. Happy Communicating!

Ready for Another Computer? Think TCL!

Richard Cree

It is a recognized fact that computers have created a revolution in the way businesses today approach once tedious and often overwhelming tasks. A business trying to operate in today's environment without computer assistance runs a high risk of being unable to meet the demands of daily competition.

However, as with any capital asset whose main design is to help minimize work load, the real cost in dollars and cents is often beyond the immediate cash flow capability of the company that needs it most. Even though technological advances have continually provided greater computer capacity for fewer dollars, the cost of a computer system capable of providing the support demanded in an ever-changing environment remains high. Hardware, software and maintenance are all integral parts of an efficient system. Out of pocket costs can deplete available operating cash and defeat the purpose for which the system was originally intended.

The alternative is obvious—leverage. Use someone else's money to accomplish your objectives. This is done primarily through one of two avenues: lease or loan. There are advantages and disadvantages to each. Any lease vs. loan or lease vs. buy calculation should be done in cooperation with your own tax accountant. That's what leasing is—a tax-oriented finance vehicle. And it is that treatment of tax benefits that Tandy Computer Leasing (TCL) offers potential lessees.

FINANCING WITH TANDY COMPUTER LEASING

Almost any finance company will offer a series of financing choices for a prospective customer: straight loan, discounted loan, security agreement, conditional sale, finance lease, rental agreement, Investment Tax Credit (ITC) pass-through, ITC retained by lessor, etc. Often, trying to decide which method of financing to use is more complicated than deciding which computer system to use!

Radio Shack's approach is uncomplicated and to the point. A viable selection of hardware, peripherals, printers and applications software is available through any Radio Shack outlet. Radio Shack carry-in or on-site service is available through 247 special service facilities nationwide. And Tandy Computer Leasing's unique finance alternative is also available through every Radio Shack store throughout the United States—including Alaska and Hawaii.

Tandy Computer Leasing offers a 37 month, true lease agreement that includes a feature unique to the industry—a 30 day trial period. Most finance vehicles are termed "hell or high water". In other words, once the asset (in this case, a computer system) is delivered, payments are due the lessor/

lending institution come "hell or high water". With TCL, we ask you to use Radio Shack's system for up to 30 days and decide for yourself. If the system is not operating to your satisfaction, return it. The contract will end there. A small penalty is assessed to effect cancellation, but no further obligation remains.

If the 30 day cancellation privilege is not exercised, then the agreement automatically extends for an additional 36 months—a total of 37 monthly rentals.

HOW DO YOU INITIATE A LEASE?

Fill out a lease application at any Radio Shack store, Computer Center or participating authorized dealer. The credit information you provide will, of course, be kept strictly confidential. It will be used by Tandy Computer Leasing for the purpose of arriving at a proper credit decision.

Your local Radio Shack sales representative will telephone this data to our home office using our national WATS line service. In most cases the credit decision will be made by the end of the next business day. Then, if you decide to take advantage of the Tandy Computer Leasing program, you will need to make a prepayment deposit in an amount equal to three times the calculated monthly rental payment (including local use tax).

For example, if your monthly rental payment (including use tax) were \$250.00, your prepayment would be \$750.00. The deposit is made directly to your local Radio Shack outlet. The prepayment deposit would be applied to your account as follows:

\$250.00—First month's rent, paid in advance

\$500.00—Security Deposit, held on account until termination of the lease contract.

BUYING THE EQUIPMENT BEFORE THE AGREEMENT EXPIRES

If, during the lease term, you decide you want to acquire ownership of the microcomputer system, simply contact Tandy Computer Leasing and a purchase price will be quoted for you. The buy-out cost will be determined by the number of rental payments made, the depreciated value of the equipment at the time of purchase, local sales taxes and an estimated residual value. The full amount of the Security Deposit will be credited against the buy-out quotation.

WHAT ABOUT INVESTMENT TAX CREDIT?

Investment Tax Credit is retained by Tandy Computer Leasing. Tandy retains the credit because if the Investment

Tax Credit were passed through to the lessee, only that portion available to Tandy Computer Leasing would be available to the lessee. Since Investment Tax Credit percentages are determined by the economic useful life of the asset in question, under our criteria the full 10% credit would not be available.

Therefore, rather than pass through less than the maximum credit and then raise our monthly rentals to off-set the tax loss, we've opted to provide the lowest monthly cost to you.

MAINTENANCE SERVICE

For the period of your lease agreement, TCL will be the "owner" of the system you are using. At the same time, you will be making a substantial financial and operational investment in a computer that will become an integral part of your daily activity. Although there is no specific requirement that maintenance service be retained, your investment of time and money should be properly safe-guarded. Radio Shack offers two types of maintenance service: carry-in and on-site. Normally, these service agreements are written for one year periods and the user pays for service in full, in advance. However, through the TCL program, a set, monthly service charge will be computed. That charge will remain constant throughout the lease term for the equipment covered. Not only is there the obvious cash savings up-front, but there is the added benefit of protection against possible future maintenance increases.

WHAT HAPPENS AT THE END OF THE CONTRACT?

The choice is yours! You can return the equipment to Radio Shack, or you can purchase the equipment and acquire ownership for your own account. Because our contract is a true lease, the purchase price cannot be quoted in advance. However, we do have a provision in our lease contract that allows for a mutual determination of a purchase price. Whatever choice you make, your Security Deposit will be refunded at this time.

REMEMBER TCL

As you can see, there are two common themes that characterize the Tandy Computer Leasing program:

1. Cash savings. Use **your** funds to generate and expand your business. Let the computer help pay for itself in reduced payroll costs, higher efficiency and economic return. Minimize your up-front cash outlay.
2. One-stop shopping! One stop at any Radio Shack store, Computer Center or Plus Computer Center can provide all of the support you need to add the efficiency of computerization to your business now. You can work directly with more than 5700 Radio Shack outlets nationwide for warranty service, software applications, system operations and financing.

Additional information regarding the Tandy Computer Leasing program is available at your nearest Radio Shack store, Computer Center or Plus Computer Center.

Moving User Defined Keys

Johnson & Rushforth
530 South Fourth Street
Las Vegas, Nevada 89101-6591

The user-defined codes and the print codes available on Scriptsit version 2.0 are tremendously useful. We have found them to be even more useful when the codes are similarly defined on all disks. We use this BASIC program to transfer defined codes from one Scriptsit program disk to another.

```

10 'THIS PROGRAM IS TO TRANSFER THE USER-DEFINED
    COMMANDS AND THE PRINT
20 'CODES FROM ONE SCRIPTSIT DISK TO ANOTHER. THE
    PROGRAM/SYSTEM DISK IS
30 'PLACED IN DRIVE 0, WHILE THE SOURCE AND
    DESTINATION DISKS ARE PLACED
40 'IN DRIVE 1, AS PROMPTED.
50 '*****
60 CLEAR 7000
70 CLS
80 BC$=CHR$(1) '           Blinking Cursor
90 NC$=CHR$(2) '           No Cursor
100 RV$=CHR$(26)'          Reverse Video
110 NV$=CHR$(25)'          Normal Video
120 EL$=CHR$(23)'          Erase Line
130 ES$=CHR$(24)'          Erase Screen (from
    cursor)
140 PRINT@ (10,0)," PLACE ";RV$;" SOURCE ";NV$;" DISK
    IN DRIVE 1; PRESS ANY KEY ";BC$;
150 Q$=INPUT$(1)
160 PRINT NC$
170 SYSTEM "I"
180 OPEN "D",1,"DOCUMENT/CTL:1",256
190 FIELD 1, 255 AS A$, 1 AS B$
200 DIM X$(22)
210 DIM Y$(22)
220 FOR ZZ=1 TO 22
230   GET 1,ZZ+44 '           RECORDS 45 THROUGH 66 ARE
    INVOLVED
240   PRINT@ (15,10),RV$;ZZ+44;NV$;
250   X$(ZZ)=A$
260   Y$(ZZ)=B$
270 NEXT ZZ
280 CLOSE 1
290 PRINT@ (10,0)," PLACE ";RV$;" DESTINATION ";NV$;"
    DISK IN DRIVE 1, PRESS ANY KEY ";BC$;ES$;
300 Q$=INPUT$(1)
310 PRINT NC$
320 SYSTEM "I"
330 OPEN "D",1,"DOCUMENT/CTL:1",256
340 FIELD 1, 255 AS C$, 1 AS D$
350 FOR ZZ=1 TO 22
360   LSET C$=X$(ZZ)
370   LSET D$=Y$(ZZ)
380   PUT 1, ZZ+44
390   PRINT@ (15,10),RV$;ZZ+44;NV$;
400 NEXT ZZ
410 CLOSE 1
420 CLS
430 GOTO 290

```

Tandy TRS-80 Model 2000 Personal Computer

by Bruce Elliott

In late November 1983, Radio Shack introduced its newest 16-bit computer, the Tandy TRS-80 Model 2000. This computer is an MS-DOS based Personal Computer designed to give Radio Shack's customers the best MS-DOS Personal Computer in the market today. The Model 2000 offers up to 768K bytes of internal memory, floppy disk drives with 720K bytes of formatted storage each, fast operation, and more standard features than the COMPAQ, IBM PC, or other MS-DOS computers.

SETTING NEW STANDARDS FOR PERSONAL COMPUTERS

The Tandy Model 2000 is an ultra-high performance MS-DOS computer. Because of its dramatic speed, outstanding graphics, and increased storage we feel it sets a new standard for MS-DOS computers. To illustrate the Model 2000's capabilities, we'll compare it to the popular IBM PC.

THE MODEL 2000 IS FAST

The Model 2000 is based on Intel's new 80186 microprocessor operating at 8 Mhz. The IBM® PC and other computers such as the COMPAQ™ and Texas Instrument's® Professional are based on the 8088 and operate at 4.7 Mhz. What does this mean to you in practical terms?

First, the 80186 is a true 16-bit computer (meaning that it uses a 16-bit data path while the 8088 has only an 8-bit data path). The wider data path of the 80186 combined with its higher clock speed means that work can get done faster.

BYTE Magazine, in their January 1983 issue, offered a "benchmark" program that could be used to make comparisons between computers. In testing here at Radio Shack, we got the following results:

BYTE Eratosthenes Sieve Benchmark (Jan. 1983)

Language	IBM PC Time (sec)	Model 2000 Time (sec)	Speed Increase
MS-Pascal	11.9	4.5	264%
MS-FORTRAN	31.0	10.5	295%
GW-BASIC	2172.0	871.0	249%
Lattice C	10.6	3.9	272%

David H. Ahl in his article "Benchmark Comparison Test" (Creative Computing Nov. 1983) published a short benchmark whose purpose is to test execution speed in BASIC, computational accuracy using BASIC, and the randomness of BASIC's random number generator. While we

did not test the third factor, we got the following results for the first two (IBM PC results are those published in the article):

Computer	Time	Accuracy
Model 2000	0:06	.005859375
IBM PC	0:24	.01159668
Apple IIe	1:53	.0010414235

This later test suggests a speed increase of 400 percent with twice the accuracy of the IBM PC.

What these tests suggest is that if you had a Model 2000 and an IBM PC performing the same program, and the programs are doing extensive computations (rather than lots of keyboard input), the Model 2000 should finish in less than half the time of the IBM PC.

Please note that we offer these comparisons as relative measures of relative performance. Different results can be obtained from these same benchmark tests by adjusting factors like the amount of memory available, the internal clock speeds, and the particular version of a language that is used. The actual workday speed differences between the machines will vary depending on actual programs used, the skill of the operators and other factors.

MORE MEMORY, START TO FINISH

The standard Tandy Model 2000 comes equipped with 128K bytes of RAM compared to the 64K which is standard in the TI Professional and the IBM PC. The Model 2000 can be expanded to 768K RAM. The IBM PC can be expanded to 640K RAM and COMPAQ to 512K RAM.

The RAM used in the Tandy Model 2000 is a type of RAM known as "parity-checking" RAM. What this means to you is that the Model 2000 is able to detect certain types of memory errors and correct them. Most microcomputers on the market today, including the other MS-DOS computers, use a non-parity checked RAM.

LOTS OF DISK SPACE AVAILABLE

The standard Model 2000 comes equipped with two advanced technology, 96 tpi (tracks per inch) 720K 5 1/4" Slim-line Floppy Disk Drives. The Tandy Model 2000 includes the Floppy Disk Controller on the main logic board, so you don't have to use one of your expansion slots as you do on the IBM PC.

With the IBM PC, you can get up to two 160K 5 1/4" floppy drives (using IBM's standard MS-DOS 1.1. 320K drives are available as an option.) Both the TI and COMPAQ machines use 320K drives. The Model 2000 will have at least twice as much floppy storage space as any comparably equipped IBM PC, TI Professional or COMPAQ.

THE DAWN OF A NEW ERA IN M

Presenting the New Tandy TRS-80 Model 2000 Personal Computer

A truly remarkable system that offers you more than other MS™-DOS based computers. More speed. More disk storage. More expansion. Higher resolution graphics. And beyond that, the support and superior price/performance ratio that have kept Tandy Corporation in the forefront of the microcomputer industry from the beginning. Take a look at what we offer.

In a Word—Quality

Quality in design, and quality in performance. Quality to make the Model 2000 work for you—and keep working—for a long time to come.

Flexible, Ergonomic Design

The attractive, modular Model 2000 system easily adapts to you and your environment, and occupies a minimum amount of desk space.

MS-DOS Operating System

Rapidly becoming an industry standard, MS-DOS lets us bring you the hottest programs on today's market, from advanced word processing to incredibly versatile spreadsheets. Programs like dBase II™, Microsoft-Multiplan™, PFS®:File, Multi-Mate™ and many more. Others are under development, including the state-of-the-art interactive MS-Windows.

High-Capacity Floppy/Hard Disk

Model 2000 stores vast amounts of data on floppy disks. For even greater storage, the 2000 HD features a built-in ten-million character hard disk drive.

Extremely High Speed

Model 2000's "next generation" 16-bit microprocessor is dramatically faster than other MS-DOS computers. That means all the Model 2000 software runs faster, so you get the job done in much less time.



Tandy Model 2000 and IBM PC Comparison Chart

Feature Description	Tandy Model 2000	IBM Personal Computer
Internal Memory	128K Standard	64K Standard
Disk Capacity Per Drive	720K	160 or (320K optional)
Clock Speed	8 MHz	4.7 MHz
True 16-Bit Microprocessor	Yes (80186) 16 bit/16 bit data path	No (8088) 16 bit/8 bit data path
User-Available Expansion Slots*	4	2
Graphics Options		
Color Resolution	640 x 400	320 x 200
Number of Colors	8	4
Monochrome Resolution	640 x 400	640 x 200
Graphics on Monochrome Monitor	Yes	No
Price Comparison†		
Base Unit	\$2750	\$2104
2nd Drive (320K)	Included	\$529
Monochrome Monitor	\$249	\$345
Display/Printer Adapter	Included	\$335
128K RAM	Included	\$165
RS-232	Included	\$120
MS-DOS 2.0	Included	\$60
Total Cost*	\$2999	\$3658

*Comparable IBM configuration with monochrome adapter and display communications adapter, two 320K disk drives and 128K RAM. †Mfg. pricing as of 9/1/83.

Tandy TRS-80 Model 2000 Specifications

Microprocessor: Intel 80186 processor with 16-bit data path. Clock speed, 8 MHz. Object code compatible with 8086/8088. Two direct memory access channels. Three programmable timers. **Operating System:** Includes Microsoft's advanced MS-DOS 2.0 with BASIC. **Memory:** 128K RAM with parity; expandable to 768K. Includes power-up diagnostics. Sound included. **Keyboard:** 90-key sculptured, including numeric entry keypad. Special keys include HOLD, ESCape, BREAK, CTRL, CAPS, INSERT, DELETE, HOME, Up, Down, Right and Left arrows. Twelve programmable Special Function keys. Retractable legs, 6 ft. coil cable and keyclick. **Optional Video Display:** High-resolution, non-glare, non-interlaced 12" monochrome (green) or 14" color monitor. 80 or 40 characters per line by 25 lines. User-definable character set. Upper and lower case, reverse video, underline, blank blink, double wide, double high. Smooth scrolling and split screen. **Optional monochrome high-resolution graphics (640 x 400) and color (640 x 400) displaying 8 colors selected from 16—white, yellow, cyan, green, magenta, red, blue, black, (full and half-intensity).** **Disk Drives:** Two built-in double-sided, double-density, thin-line 5 1/4" mini-floppies with 720K per drive formatted. 96 tracks per inch. Model 2000 HD has one 720K mini-floppy and one 10-megabyte hard disk drive. **Internal Expansion:** Four user-accessible plug-in card slots. An additional 128K of memory does not require user slot. **External Connections:** Standard parallel port. RS-232C serial communications port. AC outlet for display monitor, monochrome monitor connector. **Dimensions:** 8 1/2" x 12 1/4" footprint (pedestal base) when using floor stand and pedestal. Keyboard in lap. 18 1/2" x 21 1/4" with monitor on CPU and keyboard under CPU. **Power Requirement:** 120VAC, 60Hz. U.L. listed.

12 user-programmable function keys with slide-out legends



Detachable 90-key keyboard with plain English labels, not cryptic symbols

Low-profile, sculptured keys

TRS-80 Model 2000 Was Designed With You in Mind

The Model 2000's stylish white exterior enhances any office environment. But it's much more than just attractive. Unmatched flexibility and comfort make the Model 2000 a milestone in the science of ergonomics. So it works for you, not against you. Choose from a variety of options to increase usable desk space and add convenience.

For example, you can place your VM-1 monochrome monitor on the compact **Monitor Pedestal** (#26-5115, \$89.95), then tilt and swivel the monitor to the optimum viewing angle.

Or mount the CPU beside or under your desk with the **Floor Stand** (26-5116, \$145.00). The monitor and keyboard can be used up to 8 feet away. Using both the pedestal and floor mount, with the keyboard in your lap, you have the smallest possible "footprint"—just 8 1/2 x 12 1/4". And in the standard desktop configuration, the keyboard slides under the computer to minimize storage space when not in use.



MICROCOMPUTER TECHNOLOGY

Easy Expansion Capabilities

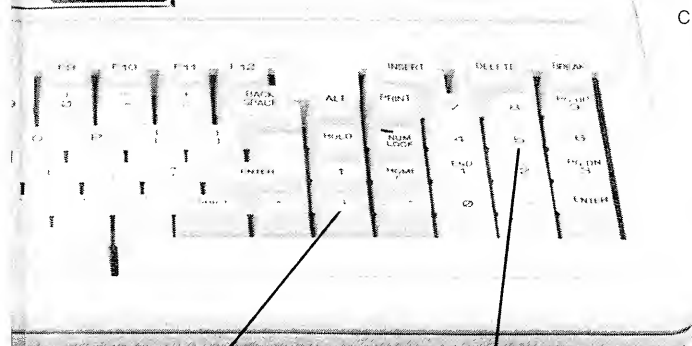
Add additional memory, stunning high-resolution monochrome and color graphics, a mouse and more. And you can install many options yourself.

Manufacturer Service and Support

On-site and carry-in service is available through our nationwide network of stores. We also offer complete software support, training, leasing, a newsletter and a telephone "hot line".

YOUR
Radio Shack
HOT LINE
CARD
CITIBANK

PERSONAL COMPUTER



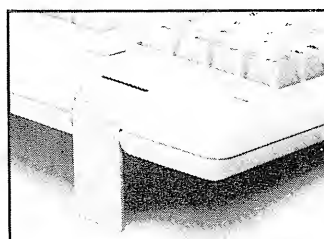
Four cursor control keys

10-key numeric datapad—flat for fast data entry



Compare the TRS-80 Model 2000 to the IBM® Personal Computer

To see just how advanced the Model 2000 is, compare it to today's most popular MS-DOS computer—the IBM PC. A true 16-bit microprocessor makes the Model 2000 almost three times faster in actual benchmark comparisons. Model 2000 disk drives have over four times the storage of their standard drives. Our color graphics are twice the resolution of IBM's, and offer twice as many colors. Unlike IBM, all four of our user-accessible card slots are available for future growth. And Model 2000 even costs less. The comparison chart below left speaks for itself.



The Logical Choice

Putting it simply, the Tandy Model 2000 delivers extraordinary quality with higher performance and a lower cost than the IBM PC.

See the TRS-80 Model 2000 Today

It's available at over 1000 Radio Shack Computer Centers nationwide. One look will tell you there's never been another computer like it.

Tandy Model 2000
With Two
Disk Drives

2750⁰⁰
26-5103

Tandy Model 2000 HD
With Built-In
10-Megabyte Hard Disk

4250⁰⁰
26-5104

Optional non-interlaced monitor required

Extend the retractable legs for comfortable typing on your desk—or type with the keyboard on your lap

Display Monitors and Accessories

VM-1 High-Resolution Monochrome Monitor (#26-5111, \$249.00) features a 12" non-glare, green phosphor screen with an easy-to-read 80×25 text format. Tilts 5 to 10 degrees.

High-Resolution Monochrome Graphics (#26-5140, \$449.00) produces 640×400-pixel monochrome graphics on either the VM-1 or CM-1. User installable.

TV/Joystick Option (#26-5142, \$249.95) lets you connect any TV set or monitor. Includes graphics, sound generator and support for optional joysticks. User installable. Available 3/15/84.

CM-1 High-Resolution Color Monitor (#26-5112, \$799.00) features a vivid 14" screen and tilts 5 to 10 degrees. Requires #26-5140.

High-Resolution Color Graphics Chip Kit (#26-5141, \$199.00). Create superb graphics in 8 of 16 colors with 640×400 resolution. Requires #26-5140. User installable, however, installation by our technicians is recommended.

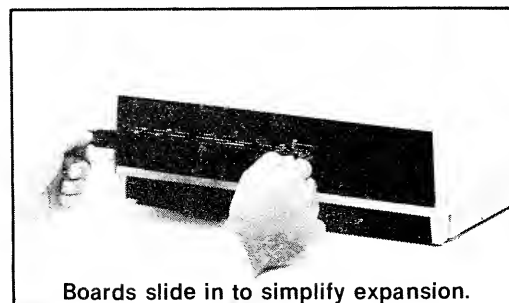
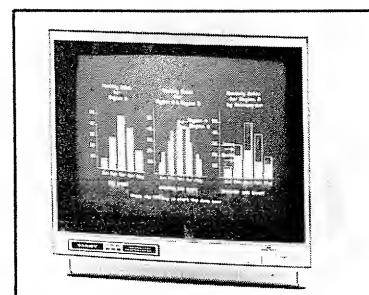
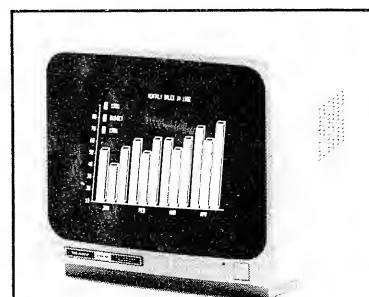
Digi™-Mouse/Clock Board (#26-5144, \$119.95). Digi-Mouse controller and clock. MS-Windows operating environment software included at no extra cost. User installable. Available 3/15/84.

Digi-Mouse (#26-1197, \$99.95) plugs in for easy cursor movement in specified programs. Requires #26-5144, above.

Internal 128K RAM Kit (#26-5160, \$299.00) expands Model 2000 to 256K. Does not use a card slot. Requires installation, not included.

External 128K RAM Board (#26-5161, \$499.00) User installable. Add up to 2 boards.

128K RAM Upgrade Kit (#26-5162, \$299.00) expands #26-5161 to 256K. User installable, however, installation by our technicians is recommended.



Boards slide in to simplify expansion.

FANTASTIC VIDEO DISPLAY OPTIONS

To start off, the Tandy Model 2000 offers a monochrome monitor connector for Radio Shack's VM-1 monitor as standard equipment (does not require the use of an expansion slot.) The IBM PC requires that you use one of your expansion slots for whatever video output device (TV or monitor) you choose to use.

With the Model 2000, if you want high resolution graphics you install the High-Resolution Monochrome Graphics Option, and your monochrome monitor (VM-1) will provide you with 640 by 400 pixel (dots) monochrome graphics.

The IBM PC and COMPAQ high-resolution monochrome graphics only give you 640 by 200 pixels. The TI Professional offers 720 by 300 pixels for monochrome graphics.

If you want color graphics on the Model 2000, all you need is the high-resolution color monitor (CM-1), the High-Resolution Monochrome Graphics Option, and the High-Resolution Color Graphics Option (which is a chip upgrade to the monochrome board). You will still get 640 by 400 pixels, and you can display eight (8) of sixteen (16) colors for your displays.

With COMPAQ and the IBM PC, you get four colors and only 320 by 200 pixel resolution. The TI Professional offers eight colors and 720 by 300 pixels for high resolution color graphics.

The IBM PC uses two separate boards to get monochrome or color high-resolution graphics. The Tandy Model 2000 uses a single board with a memory upgrade to go from monochrome to color graphics.

Further, with the Tandy Model 2000, you can display high resolution graphics on either our low cost monochrome monitor (VM-1) or our color monitor (CM-1). With the IBM PC you can display high resolution graphics only on the more expensive color monitor, even if you want to use monochrome graphics.

GREATER EXPANDABILITY

You may have noticed that the IBM PC requires that you use expansion slots for everything. You have to use one of the five slots for video and one for the floppy disk interface. You also have to use one slot for a serial interface. All of these features are standard on the Tandy Model 2000 and operate without the use of expansion boards.

This means that to have a 128K IBM PC with two floppy drives, video monitor, parallel printer (included on the IBM monochrome video board), and a serial interface you would have to use three of the available five expansion slots.

A comparable Model 2000 would use none of its four expansion slots. You would be able to upgrade your Model 2000 to 256K of RAM and still not use an expansion slot.

What this means for you as a computer user is that you can easily expand your Model 2000 with available options. Options which are available now include additional RAM, high resolution monochrome or color graphics and a 10-megabyte internal Hard Disk (if you originally bought the two floppy drive Model 2000). In the near future we will also offer a TV/Joystick Adapter board and the Digi™-Mouse/Clock Controller board.

One possible Model 2000 configuration starts with the 128K two-drive Model 2000, then adds an additional 128K of

RAM internally, 256K of RAM (for a total of 512K RAM) on one expansion board, either the TV/Joystick board or the monochrome/color High Resolution Graphics board, the 10-Megabyte Hard Disk, and the Digi-Mouse/Clock Controller board. All of this in the standard Model 2000 cabinet.

An IBM PC with similar equipment would require the addition of the IBM expansion box. While you would pick up some additional expansion slots for the IBM, you would also have to deal with the expansion box which would have to sit somewhere on your desk.

DESIGNED WITH YOUR ENVIRONMENT IN MIND

The Tandy Model 2000 is more than just attractive. It was also designed with your space needs in mind. Probably the most usual way to set the 2000 up will be to place the Computer on a desk with the monitor on top of the computer and the keyboard in front.

However, with the Model 2000's optional Floor Stand, you can place the Model 2000 up to eight feet away from the monitor and keyboard. This will let the Model 2000 fit in places that are simply too small to hold the other Personal Computers. The Floor Stand will also let you put the 2000 beside your desk leaving only the monitor and keyboard on top of your desk.

For the absolute minimum desk space usage, combine the VM-1 Monitor Pedestal with the Floor Stand. The Monitor Pedestal allows you to adjust your viewing angle and rotate the monitor for maximum comfort. If you work with the Model 2000's keyboard in your lap, the computer requires only 104 square inches of desk space (for the Monitor Pedestal.) This is approximately one third the space required for the Texas Instruments or IBM computers.

SOFTWARE FOR EVERY NEED

Most of the following software is available NOW for the Model 2000 (those items with asterisks will be available over the next six months):

Word Processing

MultiMate™ (26-5330 \$249.95)—A highly-acclaimed program that duplicates the features and power of a dedicated word processor. High speed, excellent documentation and easy-to-learn commands make it perfect for writers, managers, and secretaries (requires 256K).

*PFS:Write (26-5309 \$140.00)—As easy to use as a typewriter, but with the power and versatility of a word processor. You can even print text with reports and graphs created by PFS:File and PFS:Report.

*Microsoft-Word (26-5314 \$375.00)—This program has amazing capabilities. Multiple windows let you view several documents or portions of documents at once. Your text is even displayed exactly as it will be printed, including the type style.

Electronic Filing

PFS:File (26-5305 \$140.00)—An extremely simple way to create and organize your own personalized electronic filing system. Store, retrieve, and review information in seconds with a few keystrokes. Ideal for a variety of applications—business, professional, home, and education.

PFS:Report (26-5306 \$125.00)—A powerful analysis tool that creates specialized tabular reports from data stored in PFS:File. You can easily produce presentation-quality reports of sales, inventory, employee information, and more.

dBase II (26-5352 \$595.00)—A relational data base management system that is as powerful as any on the market. Yet "plain English" commands make it easy for both beginning and advanced users. You can quickly create a full business information system that will grow as you grow. And you can easily add, delete, edit, display, print, and manipulate your information. Automatic calculations take just a few keystrokes. Create customized reports that access data in several data bases. And when you change the file format, the data isn't affected. Requires 256K RAM.

Spreadsheet Analysis

Microsoft-Multiplan (26-5311 \$249.00)—This popular "second generation" electronic spreadsheet integrates with other Microsoft programs. You can link different worksheets so information is transferred between them automatically. Create multiple windows for simple data comparison. And sort data either numerically or alphabetically. On-line reference guide and plain English prompts make it exceptionally easy to use. Flexible formatting options let you print elegant finished reports.

Graphics

***PFS:Graph** (26-5307 \$140.00)—The easy way to create bar charts, line graphs, and pie charts. Use the data already stored in PFS:File, or enter new information. Great for use in sales presentations, meetings, sales reports, and documentation.

Small Business Accounting

From MAI/Basic Four. Already proven in thousands of mini-computer applications worldwide, Basic Four's integrated software is just what small businesses have been waiting for. These programs are available for the first time on a microcomputer. The clear, concise documentation will have you speeding through tasks that previously took days to complete. The commands for the programs are similar, so if you learn one, you have practically learned them all.

- General Ledger (26-5210 \$495.00)
- Accounts Payable (26-5212 \$495.00)
- Accounts Receivable (26-5213 \$495.00)
- *Inventory Control (26-5214 \$495.00)
- *Order Entry (26-5215 \$495.00)
- *Purchase Orders (26-5217 \$395.00)
- *Payroll (26-5218 \$495.00)

Communications

Videotex Plus (26-5260 \$49.95)—Deluxe communications program lets you access major information networks by phone. Advanced features reduce on-line time. Includes free hour of connect time on CompuServe and Dow Jones News/Retrieval.

Programming Languages

MS-Pascal Compiler (26-5256 \$299.95)—Compatible with the ISO proposed standard with many extensions.

MS-FORTRAN (26-5255 \$349.95)—ANSI FORTRAN-77 compatible. Link FORTRAN subroutines with MS-Pascal.

MS-Assembler (26-5252 \$99.95)—Full-featured macro assembler for advanced programming.

***MS-GW BASIC Compiler** (26-5251 \$299.95)—Compile your BASIC programs into faster machine-language code.

***COBOL** (26-5257 \$595.00)—An MS-DOS version of the popular RM™-COBOL.

Personal Programs

Home Accountant Plus™ (26-5340 \$124.95)—This best-selling personal finance package lets you know your exact financial standing every day of the year. You can even print net worth statements and create bar graphs.

Witness™ (26-5376 \$49.95)—A hard-boiled who-dunit thriller set in the thirties.

Planetfall™ (26-5377 \$49.95)—A humorous science fiction adventure.



Accessing Profile Data From BASIC (Continued)

The Small Computer Company

P.O. Box 2910

Fort Worth, TX, 76113-2910

By Ivan Sygoda, Director, Pentacle

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The letters we've received about these columns indicate that using BASIC to access Profile data is the subject our readers find most interesting. In general, users have described an amazing variety of Profile applications, everything from keeping track of marriage records to listing entrants and winners in horse shows. We always claimed Profile was flexible, but the claim turned out to be modest.

This month I'm going to open the readers' mailbag again and discuss some of the problems you've described. I'll also clarify some points raised in previous articles on the subject. See, in particular, "Accessing Profile Data from BASIC" (July 1983), "Restructuring Profile Data Bases" (August 1983), and "Profile and the Model 100" (October 1983).

THE BASIC QUESTION

The first question to deal with is: why program in BASIC at all? If Profile is so flexible, why should one have to? There are two answers to this question, depending on your attitude towards computers and their uses.

The First Answer: The first line of reasoning goes like this: though Profile is powerful, there are certain things it cannot do easily. The reason is program size and complexity. For example, Profile could let you generate reports longer than two lines per record or let you display reports on the screen instead of printing them. However, had these been built into the program, there would have been less room for data on your diskettes. The absence of these kinds of functions is part of a compromise. If user demand justifies it, enhancements could become available for precisely such operations.

Then, there are some functions that Profile cannot fulfill by its very nature. Profile is a record oriented file management system, and it deals with each record one by one. The report generator allows you to pull sub-totals and grand totals of your whole file or, by using the selection procedures, subsets of the whole file. But you can't pass information from one record to another. Some users had problems because they did not understand this crucial point.

Checks and Sums: One user wanted Profile to keep track of vehicle maintenance—gas and oil expenditures, repairs, etc. So far, no problem. He set up the appropriate fields for date, quantity, amount, and for the odometer mileage at the moment. But he also wanted to keep a running tally of miles per gallon and rates of expenditure, and this is where he and the program parted company. Profile can't fetch the mileage recorded in the previous transaction to determine

the distance travelled since that time, so it can't calculate gas mileage. You'd have exactly the same problem if you tried to set up a checkbook-maintenance system using Profile. The program could easily record all the details of each transaction, but it can't keep the running balance.

There are ways around most of these limitations in BASIC, so the first answer is: if your application requires a function that the released version of Profile doesn't provide, and if you are willing to devote time and energy to writing a BASIC program to fulfill that function, by all means go right ahead. But also use common sense—why use a \$200 program to keep your checkbook when dedicated software is available for less than half that amount?

The Other Answer: There is a second answer to the BASIC question: use BASIC because it's there and because it's fun. This idea will either grab you or it won't. If it does, congratulations! You've got the bug, and there are no treatment centers, no Hackers Anonymous to keep you away from the keyboard, no support groups for computer widows or widowers.

We've received many letters from both sorts of people: business persons using BASIC to customize their applications and hobbyists who love a challenge. Both have usually found what they were looking for.

THE NUMBERS GAME

One area of BASIC programming that causes some confusion involves transferring numbers between Profile and BASIC. When are you supposed to use the paired CVI and MKI\$ functions, and when should you use VAL and STR\$? William E. Taylor of Eugene, Oregon, wrote a letter asking about this making me realize I wasn't at all sure of the answer. Looking these functions up in the TRSDOS manual didn't clarify matters to my satisfaction.

The Computer Level: It all has to do with the difference between numerical expressions and string expressions. On the machine level, the computer stores numbers using the binary system. One byte, made up of eight on/off or 1/0 bits, can represent the numbers from 0 to 255 or, in binary notation, 00000000 to 11111111. To avoid going blind or mad or both, computer engineers use the hexadecimal system instead of binary notation.

Zero is 00 in hex and 255 is FF. Since 255 of anything isn't much these days, the engineers have figured out how to pair bytes together so that two of them together make up a

number. Thus, in a sense, your computer can count up to FFFF, which is the hexadecimal equivalent of 65535, which is also 64K (64×1024 , or 2 to the 15th power).

Of course, you can do math involving higher numbers. I'm just discussing "integer" math, which brings us back to the point. The computer counts integers between a certain range by placing the amount in two adjoining hexadecimal bytes which are then stored in memory. I recommend William Barden's excellent "Programming Techniques for Level II BASIC" (Radio Shack catalog number 62-2062, \$4.95) for a much more complete explanation of all this.

The Profile Data Level: When you are dealing with the Profile data, a completely different system applies. Profile stores all your information, text and numbers, as strings. This is done according to the ASCII standard that assigns code numbers to each letter, numeral, punctuation mark. A list of these codes is in your owner's manual.

Take the number 42517, for example. Its hex representation is B0A7 or, to break it down into its two bytes, the "most significant byte," B0, and the "least significant byte," A7. Its ASCII representation, on the other hand, is 52 50 53 49 55 in decimal numbers, which is stored inside your computer as the following five bytes in hex: 34 32 35 31 37. If you examine a particular byte of memory, you would have no way of knowing whether you were looking at the hexadecimal representation of an ASCII code, a number, an instruction or control code. The computer figures it out from the context, which brings us back to the point.

To use CVI and MKI\$, you should be converting back and forth from the two-byte hexadecimal representation of integers. It won't work for ASCII data, even if the number in question happens to be only two digits long. The coding system is completely different. That is why, when you manipulate numbers contained in Profile key and data segments, you have to use VAL and STR\$ functions. Let's say that you have fielded your buffer and assigned the variable name BD\$ to a "balance due" field. After getting the desired record, you can access the amount, which Profile stores as an ASCII string, by writing a line of BASIC like the following:

```
..... 120 BD = VAL (BD$)
```

When you have finished manipulating the number as required by your application, perhaps adding a late charge, you have to put it back in string form using the STR\$ function:

```
..... 200 RSET BD$ = STR$(BD)
```

Be very careful about right-justifying numbers, which is what Profile does when you define a field as numeric. Review the pages in the Profile manual that explain right-justification.

The Profile Program Level: Profile itself, however, is written in machine language, and uses the two-byte hexadecimal system for record numbers and in indexing. So you should use CVI/MKI\$ in these cases:

```
..... 90 RN + CVI(RN$)
```

It would be unusual to use the inverse of CVI, as in:

```
..... 150 RSET RN$ = MKI$(RN)
```

because I don't think you would want to mess around with the record number pointers in a Profile index. Also, since record numbers are integers, you would be unlikely to use the CVS and CVD functions.

OOPS!

I would like to elaborate on a point I made in the October 1983 article ("Profile and the Model 100"), which could not

be gone into there because of space limitations. On page 31, left column, in the paragraph that follows the program listing, I mention having gotten into trouble when assigning buffer variables. Here's a discussion of the problem: I had to assign buffer variable names to a long list of fields, and so for the sake of efficiency I named them FA\$, FB\$, FC\$. . . FT\$. The program crashed at line 45, where I made the assignment statements, and I couldn't figure out what the problem was. The computer kept insisting I had a syntax error, but I had typed and retyped everything correctly.

Finally, it dawned on me. Buried in the list of variable names was FN\$. "FN" is a "reserved word" in BASIC, which means it is a key word, one used for commands and functions. When BASIC saw "FN" in my listing, it tried to execute a "function call," but my syntax was wrong for it. The problem disappeared when I changed FN\$ to FW\$.

There is a lesson in this. It's usually people who make mistakes, not computers. Also, it's a good idea to read through the manual every now and then. I had completely forgotten about reserved words. There's a list of them in your operations manual.

1984

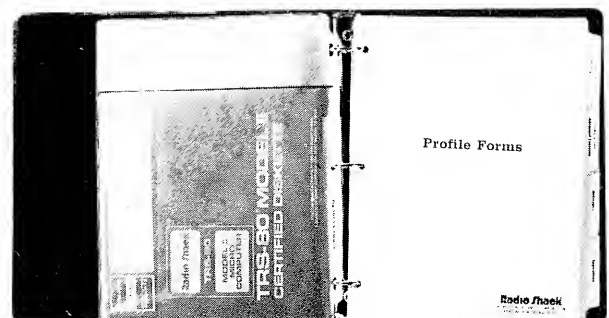
We've reached the beginning of a significant year. A lot of ink is being spilled about George Orwell's famous novel, and many pundits are comparing our information society to the controlled civilization that he described so threateningly. You remember: "Big Brother is watching you" and all that.

Knowledge is power, they say. If the governments and the multi-national corporations had all the computers, we'd have plenty to worry about. But they don't. We have them, too. In the grand scheme of things, Pentacle is a miniscule non-profit performing arts service organization, probably smaller than most of the businesses that use Profile. Yet for a relatively modest capital investment, less than some people pay for a car, we were able to acquire enough computing power to give us a handle on our corner of the world. And we've got essentially the same operating system as the big guys. Thanks to the technological revolution that placed this power in our hands (and if we keep our wits about us) Big Brother is you and me.

Happy New Year.

PROFILE Editor's Note: This is Mr. Sygoda's fifteenth article in a series of 'how-to' Profile articles. Other articles in the series will be published over the next few issues in this column. We hope that you enjoy this feature, and we look forward to your comments and questions on Profile.

Pentacle is a New York City-based non-profit service organization specializing in administrative services for performing art groups.



PC-2 Communications

by Peter Levy

This month's subject is the use of the PC-2 with an external serial printer. Using the PC-2 with an external printer allows you to produce full-width printed output. If your printer has a graphics mode, you can also program the PC-2 to produce large dot-matrix graphics.

First, of course, one must obtain a suitable printer and connecting hardware. Radio Shack sells several printers with serial input capability, notably the DMP-100 and -200. A fair number of aftermarket printers also allow serial input. Aside from the printer itself (and the RS232 Interface), the only other hardware you need is a cable, which of course is specific to a particular printer. Radio Shack's 26-1327 (DB-25W to 4-pin DIN) works with many model printers.

Once the PC-2 and printer are each set up, hooking up the printer is a simple matter of running the cable between them. Now you can start turning things on and we can discuss making the printer go at the PC-2's bidding.

The last part of setting up is to find out what communications protocol your printer uses (it'll be in the owner's manual, of course) and use the PC-2's SETCOM command to tell the computer what the printer expects of it. In case you aren't familiar with SETCOM, the manual will tell you that the printer expects a certain baud rate, word length, parity, and number of stop bits. Let's say your printer expects 300 baud, 8-bit words, no parity, and 1 stop bit. The SETCOM command for this example protocol would be SETCOM 300,8,N,1. This command can be part of a program; or if you prefer it can be issued once as a direct command before any programs are run.

Okay, let's go. In its simplest application, we'll just use the printer as—well, a printer. Make it the system's printed-output device. This is done with the PC-2's SETDEV (SET DEVICE) command, which instructs the PC-2 to substitute RS-232 input or output for data normally handled by other devices, such as the keyboard or (aha!) printer.

Since our printer is hooked up to the RS-232, we want the PC-2 to stop using the printer-plotter it normally uses and send that device's data out the RS-232 so the printer can use it. We are, in the parlance, going to set the printer's output to the RS-232 port.

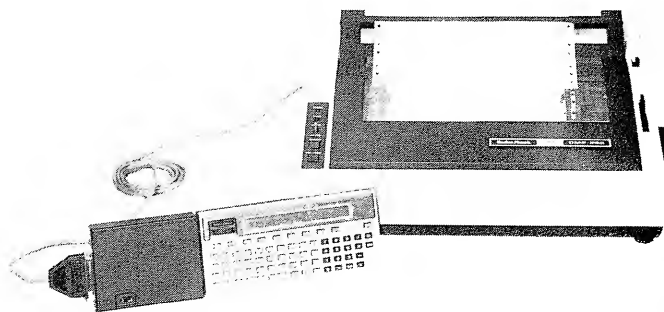
SETDEV's abbreviation for printer output is "PO", so we just tell the PC-2 "SETDEV PO". That's all there is to it, the external printer is now the system printer.

Now, a couple of potential "gotchas". First, not ALL of the PC-2's printer output will be sent to the RS-232. Remember, the SETDEV statement only takes effect when the PC-2 is actually running a program—when not in RUN mode or when the BUSY indicator isn't on, it has no effect on I/O.

Next, if you use a printer-plotter command your serial printer doesn't recognize—like if you go into GRAPH mode and try to draw a red line with your dot-matrix printer—strange things may happen.

If you want to mix use of the PC-2's printer-plotter and a remote printer, remember that you can use SETDEV as a program statement. This lets you switch devices while the program is executing.

Also, remember that you can send any specific output to the RS-232 via PRINT #8. This statement sends its output through the RS-232 regardless of any SETDEV condition in effect.



Bulletin Boards

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Charles E. Moore, Sysop
Seven Hills Hillbilly Board
P.O. Box 31
Forest, VA 24551

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John W. Kelley, Sysop
TBBS Electronic Bulletin Board
One Ely Court
Metuchen, NJ 08840

Class Schedule on the PC-4

Dave Zimmerman
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I bought one of the new PC-4's recently and I simply adore it. It compliments my Model 4 very nicely. I wrote a program for the PC-4 to display my classes, teachers, and rooms for school at the beginning of the year, so I don't lose that essential information. This program makes use of the "2-D array from a 1-D array" algorithm. Periods 1-8 are classes, 0 is homeroom. Of course, nothing can be longer than 7 characters.

```
DEFM 27
VAC
P0
1 FOR A=0 TO 8
2 PRINT "Class";A;
: INPUT Z$(A*3+1)
3 PRINT "Teacher";A;
: INPUT Z$(A*3+2)
4 PRINT "Room";A;
: INPUT Z$(A*3+3)
5 NEXT A
6 GOTO #1
```

```
P1
1 PRINT "Classes"
2 INPUT "Period",A
: A=INT(ABS(A))
: IF A>8 THEN 2
3 FOR B=1 TO 3
: PRINT Z$(A*3+B)
: NEXT B
4 GOTO 2
```

Compounding Interest

Ann Hurne
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Ramsey, NJ 07446

Because the months have varying numbers of days (30, 31, 28, 29), I wrote a program for the PC-2, using AREAD. This program helps you figure each month's interest and the growing principal when the interest is compounded daily.

Before running the program, in the RUN mode, type in the number of days in the month, then DEF A.

```
10 "A" AREAD D
20 PRINT "S&L Compounding Interest"
30 LET I=0
40 FOR N=1 TO D
50 IF P>50000 THEN 70
60 LET P=50000
70 LET I=I+(P*(.162/360))
80 LET P=P*(.162/360) + P
90 NEXT N
100 BEEP 5,45,14
110 USING "#####.###"
120 LPRINT INT (I*100+.5)/100
130 LPRINT INT (P*100+.5)/100
140 END
```

Time/Date Display

Yoichi Ishikawa
12606 Gilmore Avenue
Los Angeles, CA 90066

I recently bought a PC-2 and sometimes use it for testing my program before I actually use a million dollar system. However, I am not satisfied with the way it displays the current date and time. I wrote a simple program to display it in the usual manner.

```
10 ARUN
20 BEEP 10,50,10
30 Z=TIME
40 A$=STR$ Z
50 IF LEN A$=11 THEN GOTO 70
60 A$="0"+A$
70 B$=MID$(A$, 1,2)
80 C$=MID$(A$, 3,2)
90 D$=MID$(A$, 5,2)
100 E$=MID$(A$, 8,2)
110 F$=MID$(A$,10,2)
120 PRINT B$;" / ";C$;" " " ;D$;" : ";E$;" : ";F$
```

Sunday Drive for the PC-2

Gwen Thomas
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Eden, WI 53019

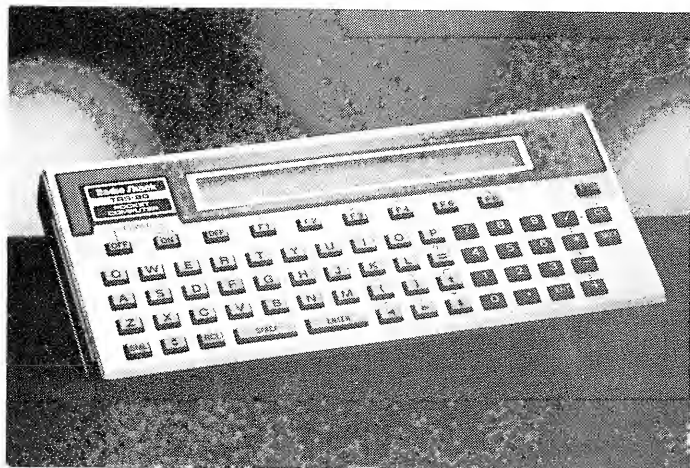
I have written a program for the PC-2 that I think your readers would like. It is a "driving" game with different levels for the high and low reaction time. Push the left parenthesis to move the car (#) left, and the right parenthesis to move right. Simply keep the car (#) on the road (between the two "!"'s).

```
2 " PRINT ")=RIGHT (=LEFT"
: PRINT "!=ROAD SIDES #=CAR"
4 "A" INPUT "ROAD WIDTH (3-13)=";B
: IF B>2 AND B<14 LET K=15*B
: WAIT 0
: GOTO 8
6 GOTO 4
8 FOR C=3 TO 1 STEP -1
: PAUSE "COUNTDOWN",C
: NEXT C
: E=RND (25-B)
: F=B+E
: G=INT (E+B/2)
10 FOR D=1 TO K
: CLS
: CURSOR E
: PRINT "!"
: CURSOR G
: PRINT "#"
: CURSOR F
: PRINT "!"
: I=5
12 IF G<E OR G>F THEN 24
14 IF INKEY$=")" LET G=G+1
: IF G> 25 THEN 24
16 IF INKEY$="(" LET G=G-1
: IF G<0 THEN 24
18 E=E+SGN(RND I-3)
: F=B+E
: IF F>25 LET I=2
```

```

      : GOTO 18
20 IF F<B LET I=9
      : GOTO 18
22 NEXT D
      : PAUSE "FINISH LINE"
      : GOTO 26
24 PAUSE "CRACKED UP"
26 WAIT 300
      : PRINT "WENT";D;" MILES"
      : END

```



Programming Hints & Tips

MODEL III TAPE TRICKS

Alan Denton
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Owensboro, KY 42301

I am a beginning computer user with a second hand TRS-80 Model III. I soon found that a 16K tape based operation was not an optimum choice and considered my other possibilities. I decided that my most affordable choice was to expand to 48K. This would give me enough memory for any tape based program for the Model III and it would give me plenty of memory for data storage.

My main uses for this "extra" memory were for Radio Shack's "Budget Management" program (which couldn't accommodate all the checks I was writing plus all the accounts I wanted to carry) and Radio Shack's "Cassette Scipsit" (which couldn't accommodate chaining all the data tapes I might wish to print at one time.)

Enlarging the memory to 48K has satisfactorily solved both of these problems. Since I believe there are a lot of poor enthusiasts like me who have probably arrived at a similar solution, I wish to share with them two "tricks" that have helped me make speedier use of that additional memory.

(1) One of the problems with the Budget Management program is that too much time is spent loading and saving data from tape to tape. (There is a tape for initializing, one for editing, another for transactions, and a fourth for printing reports.) After entering each set of transactions (usually two

week's worth at one sitting for me) all the data must be saved on tape, then the Report program must be loaded and finally it must read the data tape before the report can be printed—before any of the information can really be viewed! Then if you find you made an error, you must go to the Edit tape and go through this process again before you can get a valid report or final data tape worth saving.

My solution: Merge the Transaction and Report programs into one program. (The Edit program could be included if you use this frequently.) I'm sure if you are at all familiar with programming and have a merge program you have already thought of this. But if you are like me you are not experienced at programming and you don't have a merge program. All you need to do is CSAVE the longest of the programs you want. Now type in the lines for the next program as listed but by incrementing the line numbers by 10,000. (If you wish a third program incorporated, type the lines as is except increase them by 20,000.) This produces an easy to read and proof program. I do not recommend incorporating the Initialization program as you would generally not use it more than once a year. After you have your programs "merged" delete the lines setting up the various variable definitions and array dimensions in all but the first/or primary program. Be sure the lines you save include all of the DEFs & DIMs (some aren't used in all programs—before deleting an instruction make sure it is included in your initial DEFs & DIMs). Insert a line requesting input which would name the program you want to run and then insert a "GOSUB" to the appropriate program. Change the "END" options in each program to a final "RETURN" so that you can go from one program back to your menu and hence another program with only one data save per session. (Also be sure to convert your new program to 1500 baud.)

(2) Cassette Scipsit users: Tired of operating at 500 baud? After you have loaded the program and see the "?" prompt, you enter "/" and see the Scipsit screen before you.

My solution: Press **(BREAK)** (for special command). Press "V" (verify) and enter. Do not have a tape in your recorder. Press **(BREAK)** a second time. This interrupts the loading procedure and returns you to BASIC. Enter "POKE 16913,1:SYSTEM". This changes the baud rate to 1500 and gives you the system prompt. Type "/" and press **(ENTER)**. Presto you have your Scipsit program intact (as far as I have been able to determine) and it is operating—saving data—at 1500 instead of 500 baud. A significant saving of time and tape.

Model 100

DISABLING THE BREAK KEY ON THE MODEL 100

Michael M. Rubenstein
CompuServe 70205,1144

To disable the **(BREAK)** key on the Model 100, "POKE 63056,128". The key will remain disabled until you "POKE 63056,0".

Magic Square for the Model 100

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Can you create a magic square in the time the computer gives you? It isn't too difficult once you know magic square principles. This is a magic square program for the TRS-80 Model 100 that selects a random base number for a square. The program displays a problem and after a period of time displays the smallest number in the square and finally a solution. This is the same square given by R. K. Phelps in the June 1983 issue for the PC-2, rewritten using random number selection and without printer instructions. To hurry the program along, press any key. To stop use the BREAK key.

```

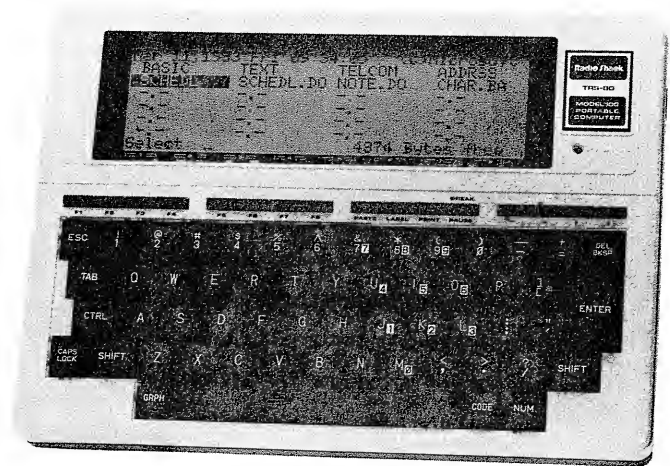
2 CLS
4 A=98.21*(VAL(RIGHT$(TIME$,2)))+.211327
6 Y=SQR(A-FIX(A))*84
8 Y=FIX(Y)
9 Q=Y*4+30
10 PRINT@ 86,"Construct a 4x4 matrix such"
11 PRINT@ 126,"that each ROW, COLUMN, and"
12 PRINT@ 166,"DIAGONAL totals ";Q
13 N=90000
14 GOSUB 20000
16 PRINT@ 70,"4x4 MAGIC";
: PRINT@ 110," SQUARE"
19 PRINT@ 190,"WITH ";Y
20 N=8000
22 GOSUB 20000
110 A=Y
: B=Y+14
: C=Y+13
: D=Y+3
: E=Y+11
120 F=Y+5
: G=Y+6
: H=Y+8
: I=Y+7
: J=Y+9
: K=Y+10
130 L=Y+4
: M=Y+12
: N=Y+2
: O=Y+1
: P=Y+15
198 PRINT
200 PRINT@ 40, USING"####";A;B;C;D
210 PRINT@ 120, USING"####";E;F;G;H
222 PRINT@ 200, USING"####";I;J;K;L
232 PRINT@ 280, USING"####";M;N;O;P
236 LINE (0,0)-(110,0)
: LINE-(110,60)
: LINE-(0,60)
: LINE-(0,0)
238 LINE (78,0)-(78,60)
: LINE (53,0)-(53,60)
: LINE (28,0)-(28,60)
240 LINE (0,11)-(110,11)
: LINE (0,27)-(110,27)
: LINE (0,43)-(110,43)
320 Q=A+B+C+D
330 PRINT@ 184,"SUM IS";Q
346 N=10000
347 GOSUB 20000
348 GOTO 2
350 END

```

```

20000 A$=INKEY$
: FOR I=1 TO N
: IF INKEY$ > "" THEN I=N
20010 NEXT I
: CLS
: RETURN

```



Scroll for the Model 100

John M. Hicks
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Verona, PA 15147

If you want a little more space in the Model 100 display for a user message, here's a way to produce a line of up to 213 characters. It scrolls from right to left continuously until any key is pressed. The demonstration code below shows that the program first defines the character string (line 100), and then invokes the subroutine (lines 1000 to 1030). Any number of messages or results may be produced in the screen printout with the subroutine by including lines similar to 100 in the code.

```

100 A$="DEMONSTRATION OF MARCHING MESSAGE IN LAST
: LINE OF SCREEN---"
: GOSUB 1000
500 PRINT@135,"END";
: GOTO 500
*
*
*
1000 B$=SPACE$(40)+A$+"PRESS ANY KEY TO CONTINUE"
: X%=LEN(B$)
1010 FOR Z%=1 TO X%
: PRINT@280,MID$(B$,Z%,38)+" ";
1020 FOR Y%=1 TO 25
: C$=INKEY$
: IF C$<>" " THEN PRINT@280,SPACE$(39);
: RETURN
1030 NEXT Y%
: NEXT Z%
: GOTO 1010

```

Don't forget to include the space character in line 1010, as it clears the last character printed each time the line increments. The scrolling speed is controlled by the range specifier on the integer Y% in line 1020 (values less than 25 make it too brisk for me). The scrolling line can be made to appear in other locations. Using PRINT@0, . . . in line 1010 will put it at the top of the screen.

Create a Random File from BASIC

Donald P. Raridan
963 Johnfer Way
Sacramento, CA 95831

Here's a handy-dandy little random file creation program that is self documenting. It is primarily useful in creating and loading a file, which can be manipulated until the operator is satisfied with the data structure. Then it can be called by any program and either displayed or printed on a line printer in any manner directed by the programmer.

Its unique feature, however, is the pack-file routine that allows deleted record space to be filled by moving data records back, leaving the last record open, which will be used by the next record addition.

Finally, there is the option available to record a hard-copy of the file data, structured by operator design within a 132 column width.

While the program was developed on a Model II, you might adapt it to run on a Model III or IV. One file will have to be opened (-F:1) from TRSDOS Ready before running the program.

```
10 *****
   *****
20 'A GENERAL RANDOM FILE CREATION SYSTEM By Donald
   P. Raridan, 963 Johnfer Way,
   Sacramento, CA 95831 - May, 1983
30 *****
   *****
40 CLEAR 5000
   : CLS
   : DEFINT A-Z
   : DIM BR(30),BF$(30),PF$(30)
   : ON ERROR GOTO 1300
50 INPUT "WHAT IS TODAY'S DATE (M/D/YY): ";D$
60 IF LEN(D$)<6 OR LEN(D$)>8 THEN 50
70 PRINT
   : PRINT "DO YOU WANT TO CREATE A NEW FILE OR
   OPEN AN EXISTING FILE? (N OR E) ";
   : LINE INPUT F$
   : IF F$="N" THEN 80 ELSE IF F$="E" THEN 90 ELSE
   70
80 PRINT
   : LINE INPUT "ASSIGN A NAME FOR YOUR NEW FILE
   (YOU MAY INCLUDE '/EXT') ";NF$
   : GOTO 100
90 PRINT
   : INPUT "WHAT IS THE FILE NAME: ";NF$
100 IF LEN(NF$)>12 OR ASC(NF$) < 65 OR ASC(NF$) > 90
   THEN PRINT
   : PRINT "BAD NAME"
   : GOTO 70
110 PRINT
   : PRINT "ANY PASSWORD? (Y=YES) ";
   : LINE INPUT Y$
   : IF Y$="Y" THEN LINE INPUT "<ENTER> WORD IN
   THIS FORMAT (.PASSWORD) - LIMIT 8 CHARACTERS AND
   DON'T FORGET TO PUT A PERIOD IN FRONT OF FIRST
   CHARACTER. ";PW$ ELSE IF Y$="N" OR Y$="" THEN
   PW$="" ELSE 110
120 IF F$="E" THEN 140
130 PRINT
   : PRINT "EACH RECORD IN THIS FILE MAY BE
   ASSIGNED A LENGTH OF 1 TO 256 BYTES. IF YOU DO
   NOT SPECIFY A RECORD LENGTH, THEN <ENTER> '0'
   AND THE TOTAL LENGTH WILL BE 256 BYTES."
```

```
140 PRINT
   : INPUT "WHAT IS THE RECORD LENGTH: ";RL
150 IF RL=0 THEN RL=256
160 ON ERROR GOTO 0
   : PRINT
   : INPUT "ON WHAT DRIVE IS FILE LOCATED OR TO BE
   CREATED: ";DR$
170 IF ERR=56 THEN ON ERROR GOTO 1320
180 ON ERROR GOTO 1300
   : IF F$="E" THEN 200
190 PRINT
   : PRINT "THIS PROGRAM PROVIDES FOR UP TO 30
   BUFFER FIELD RECORDS (LIMIT 256 BYTES FOR ALL
   BUFFER RECORDS, OF COURSE)."
200 PRINT
   : PRINT "ALL BUFFER FIELD NAMES HAVE BEEN
   ASSIGNED THE VARIABLE 'BF$'. (HIT <ENTER> TO
   TERMINATE ENTRIES.)"
210 L=L+1
   : PRINT
   : PRINT "ENTER RECORD LENGTH FOR BF$";L;
   : INPUT BR(L)
220 IF BR(L)=0 THEN L=L-1
   : GOTO 230 ELSE 210
230 PRINT
   : PRINT "WHAT REPORT TITLE DO YOU WANT ASSIGNED
   TO THIS FILE? IF NONE HIT <ENTER>: "
   : LINE INPUT T$
240 IF T$="" THEN T$="RANDOM FILE SYSTEM"
250 OPEN "D",1,NF$+PW$+"."+DR$,RL
260 FIELD 1, BR(1) AS BF$(1),BR(2) AS BF$(2),BR(3) AS
   BF$(3),BR(4) AS BF$(4),BR(5) AS BF$(5),BR(6) AS
   BF$(6),BR(7) AS BF$(7),BR(8) AS BF$(8),BR(9) AS
   BF$(9),BR(10) AS BF$(10),BR(11) AS
   BF$(11),BR(12) AS BF$(12),BR(13) AS
   BF$(13),BR(14) AS BF$(14),BR(15) AS BF$(15)
270 FIELD 1, BR(16) AS BF$(16), BR(17) AS BF$(17),
   BR(18) AS BF$(18), BR(19) AS BF$(19), BR(20) AS
   BF$(20), BR(21) AS BF$(21), BR(22) AS BF$(22),
   BR(23) AS BF$(23), BR(24) AS BF$(24), BR(25) AS
   BF$(25), BR(26) AS BF$(26), BR(27) AS BF$(27),
   BR(28) AS BF$(28), BR(29) AS BF$(29), BR(30) AS
   BF$(30)
280 '-----
290 'GOTO MENU
300 '-----
310 CLS
   : PRINT
   : PRINT TAB(40-LEN(T$)/2)T$
320 FM$="FILE MENU"
   : L$="-----"
330 PRINT
   : PRINT TAB(40-LEN(FM$)/2)FM$
340 PRINT TAB(40-LEN(L$)/2)L$
350 PRINT
   : PRINT TAB(34) "(A) - ADD"
360 PRINT TAB(34) "(C) - CHANGE"
370 PRINT TAB(34) "(D) - DELETE"
380 PRINT TAB(34) "(R) - REVIEW FILE"
390 PRINT TAB(34) "(E) - PRINT FILE & EXIT"
400 PRINT
   : LINE INPUT "YOUR SELECTION? ";S$
410 IF LOF(1)>0 AND S$="A" THEN R=LOF(1)
   : GET 1,R
   : IF R=VAL(MID$(BF$(L),7,4)) THEN PUT 1,R
   : GET 1,R-1
   : R=R-1
420 IF S$="A" THEN R=R+1
   : GOTO 530
430 IF S$="C" THEN 500
440 IF S$="D" THEN 500
450 IF S$="R" THEN 730
460 IF S$="E" THEN 950
470 '-----
```

```

480 'ADD, CHANGE OR DELETE RECORDS AND SAVE ON DISK
490 '-----
500 R=0
   : PRINT
   : INPUT "WHAT IS THE NO. OF THE RECORD YOU WANT
   TO CHANGE OR DELETE (IF
   NONE, HIT <ENTER>): ";R
   : IF R=0 THEN 310 ELSE GET 1,R
510 PRINT
   : FOR X=1 TO L
   : PRINT BF$(X),
   : NEXT
520 PRINT
   : PRINT "IS THIS THE CORRECT RECORD? (Y=YES) ";
   : LINE INPUT Y$
   : IF Y$="Y" THEN 530 ELSE 500
530 CLS
   : PRINT
   : PRINT "FILE RECORD NO. ";R
   : PRINT
   : GOSUB 680
540 FOR N=1 TO 30
550 PRINT
   : PRINT "BUFFER FIELD RECORD
   #";N;"(LIMIT";BR(N);"CHARACTERS): "
   : IF BR(N)=0 THEN 660
560 IF X$="A" THEN PRINT
   : LINE INPUT "ENTER DATA: ";R$(N)
   : LSET BF$(N)=R$(N)
570 IF X$="K" AND S$="A" THEN 630 ELSE IF X$="Q" AND
   S$="A" THEN 310
580 IF X$="C" THEN PRINT
   : LINE INPUT "DO YOU WANT TO CHANGE THIS ITEM?
   (Y=YES) ";Y$
   : IF Y$="Y" THEN PRINT
   : LINE INPUT "ENTER NEW DATA: ";R$(N)
   : LSET BF$(N)=R$(N)
590 IF X$="K" AND S$="C" THEN 640 ELSE IF X$="Q" AND
   S$="C" THEN 310
600 IF X$="D" THEN PRINT
   : LINE INPUT "DO YOU WANT TO DELETE THIS ITEM?
   (Y=YES) ";Y$
   : IF Y$="Y" THEN LSET BF$(N)=" "
610 IF X$="K" AND S$="D" THEN 640 ELSE IF X$="Q" AND
   S$="D" THEN 310
620 NEXT N
630 PUT 1,R
   : R=R+1
   : GOTO 530
640 PUT 1,R
   : IF S$="D" THEN PRINT
   : PRINT "DO YOU WANT TO PACK FILE TO USE DELETED
   FILE SPACE? (Y=YES) ";
   : LINE INPUT Y$
   : IF Y$="Y" THEN 810
650 CLS
   : GOTO 500
660 PRINT
   : PRINT TAB(6) "*** THERE ARE NO MORE BUFFER
   FIELD RECORDS ASSIGNED TO THIS FILE ***"
670 PRINT
   : PRINT TAB(27) "PRESS (K) TO SAVE ON DISK"
   : PRINT
680 PRINT
   : PRINT CHR$(26);"(A)dd, (K)eep, (C)hange,
   (D)elete, (Q)uit";CHR$(25);
690 X$=INKEY$
   : IF X$="" THEN 690 ELSE IF X$<>"A" AND X$<>"K"
   AND X$<>"C" AND X$<>"D" AND X$<>"Q" THEN 690
   ELSE IF X$="K" OR X$="Q" THEN 560 ELSE RETURN
700 '-----
710 'RETRIEVE DATA FROM DISK AND REVIEW IT

```

```

720 '-----
730 CLS
   : R=0
   : PRINT "HIT <ENTER> TO REVIEW EACH RECORD IN
   FILE"
740 R=R+1
   : IF R=LOF(1)+1 THEN PRINT
   : PRINT "END OF DATA IN THIS FILE":PRINT:PRINT
   "HIT <ENTER> TO CONTINUE ";
   : LINE INPUT X$
   : GOTO 310
750 GET 1,R
   : PRINT
   : PRINT "RECORD #";R
760 FOR X=1 TO L
   : PRINT BF$(X),
   : NEXT
770 LINE INPUT X$
   : GOTO 740
780 '-----
790 'PACK FILE ROUTINE TO USE DELETED FILE SPACE
800 '-----
810 CLS
   : PRINT "NOW PROCESSING REALIGNMENT OF RECORD
   NUMBERS....."
820 ON ERROR GOTO 910
   : GET 1,R-1
   : FOR X=1 TO L
830 PF$(X)=BF$(X)
   : IF X=L THEN 840 ELSE NEXT
840 PUT 1,R-1
850 GET 1,R+1
860 FOR X=1 TO L
   : LSET BF$(X)=PF$(X)
   : IF X=L THEN 870 ELSE NEXT
870 PUT 1,R
   : R=R+1
   : GOTO 820
880 R$=STR$(R)
   : GET 1,R
   : DR$="RECORD"+R$+" OPEN"
   : LSET BF$(X)=DR$
   : PUT 1,R
890 PRINT
   : PRINT "RECORD REALIGNMENT IS COMPLETE."
   : PRINT
   : PRINT "PRESS ANY KEY TO CONTINUE."
900 X$=INKEY$
   : IF X$="" THEN 900 ELSE 310
910 IF ERR=60 THEN R=LOF(1)
   : RESUME 880
920 '-----
930 'EXIT ROUTINE
940 '-----
950 PRINT
   : PRINT "DO YOU WANT A HARD COPY REPORT OF FILE?
   (Y=YES) ";
   : LINE INPUT Y$
960 IF Y$="Y" THEN 1000 ELSE 1260
970 '-----
980 'LINE PRINTER ROUTINE
990 '-----
1000 R=0
   : LC=0
   : PG=0
   : W=0
   : SYSTEM "FORMS L=66"
   : CLS

```

```

1010 PRINT "SPECIFY FORM WIDTH - 80 OR 132 COLUMN:";
: INPUT W
1020 PRINT
: PRINT "SET UP TABS TO COLUMNIZE DATA TO BE
REPORTED ON SIZE FORM INDICATED ABOVE. THE
FIRST COLUMN IS PRE-ASSIGNED TO REPORT THE
RECORD NUMBER USING 8 SPACES."
1030 PRINT "THEREFORE, THE MAXIMUM SPACE AVAILABLE TO
PRINT DATA ON AN 80 COLUMN FORM IS 72 AND ON
A 132 COLUMN FORM IS 124. THIS HARD COPY IS
ONLY FOR THE PURPOSE OF REPORTING THE DATA
STORED IN YOUR FILE ";
1040 PRINT "AND IT IS PRESUMED THAT YOU WILL USE IT
IN A PROGRAM WHERE DATA WILL BE PRINTED OUT IN
SOME OTHER ORDER."
1050 PRINT
: PRINT "ENTER TABS:"
: PRINT
1060 FOR T=1 TO L
: PRINT "COL. NO.";T;
: INPUT TB(T)
: NEXT
1070 PRINT
: PRINT "SPECIFY EACH COLUMN HEADING TITLE YOU
WANT IN YOUR REPORT (IF NONE,HIT <ENTER>):"
1080 FOR H=1 TO L
: PRINT "HEADING NO.";H;
: INPUT HD$(H)
: NEXT
1090 PRINT
: PRINT "YOU MAY SPECIFY HEADING UNDERLINES FOR
EACH DATA COLUMN (IF NONE,HIT <ENTER>):"
: PRINT
1100 FOR D=1 TO L
: PRINT "ENTER NO. OF -'S FOR COL.";D;
: INPUT DA(D)
: NEXT
: PRINT
1110 LPRINT TAB((W-LEN(T$))/2)T$;
: PG=PG+1
: LPRINT TAB(70) "PAGE ";PG
1120 LPRINT TAB((W-LEN(D$))/2)D$
1130 LPRINT
: LPRINT
: LPRINT "RECORD #";
1140 FOR X=1 TO L
1150 LPRINT TAB(TB(X))HD$(X);
: NEXT
1160 LPRINT CHR$(13) STRING$(8,"-");
1170 FOR Y=1 TO L
1180 LPRINT TAB(TB(Y)) STRING$(DA(Y),"-");
: NEXT
1190 LPRINT
: LC=LC+8
: IF PG>1 THEN RETURN
1200 FOR R=1 TO LOF(1)
: GET L,R
: IF LC>62 THEN LPRINT
: SYSTEM "T"
: LC=0
: GOSUB 1110
1210 LPRINT CHR$(13);TAB(2) R;
1220 FOR Z=1 TO L
1230 LPRINT TAB(TB(Z))BF$(Z);
: NEXT
1240 LC=LC+1
: NEXT R
1250 SYSTEM "T"
1260 CLOSE
: PRINT "FILE IS CLOSED"
: END
1270 '-----
'-----
1280 'ERROR TRAP
1290 '-----
'-----

```

```

1300 PRINT
: PRINT " BASIC ERROR NUMBER ";ERR;" LINE
NUMBER ";ERL
1310 PRINT " CONSULT BASIC MANUAL FOR
EXPLANATION":RESUME 1260
1320 PRINT
: PRINT "CHECK DRIVES AVAILABLE ON YOUR SYSTEM.
THE MAXIMUM NO. IS 4 (0 TO 3) DRIVES."
: RESUME 160

```



Search a BASIC Program

William Stanford, Jr.
2515 Bunker Hill Dr.
Baton Rouge, LA 70808

Model II owners might find this program useful, especially if their program techniques are as sloppy as mine.

Unfortunately, when I begin to program, the term "flow chart" disappears from my vocabulary and I plunge right into writing command lines. To keep notes on what variables are used where and for what is also apparently beneath my dignity. Therefore, I usually wind up with a ton of unnecessary variables eating up memory or a bunch of program bugs such as two variables using the same letter. So I developed SEARCH/BAS to help me seek out my "boo-boos" so I could fix them.

Here's how it works. First, save the program you want to analyze in an ASCII file. Then run SEARCH/BAS. The program will ask you for the ASCII file you wish to load. The file is then loaded into a string array that can then be analyzed in BASIC. The central menu allows you to:

List the entire program on the printer.

Search the program for a particular phrase or variable.

Start over by loading another ASCII file.

Exit the program.

Let's assume you wish to search this program for all the lines containing the statement PRINT@. From the central menu press (S), then type (PRINT@). The com-

puter will then return to the screen a list of all command lines containing the phrase PRINT@ and allow you to:

- View any line on the screen.
- Print hard copy of these lines.
- Print a list of these lines.
- Return to the central menu.

One problem has arisen using this program. In programs in which certain letters have been defined as strings, combinations of letters appear whether it is a variable or not. For example, if you have defined A as a string and are seeking lines containing the string variable AB, this program will not only return all the lines containing the variable AB, but it will also return any line number in which the pair of letters AB appear, such as in the word TAB. In any event, since corrections are not made from this program, this problem is little more than an inconvenience.

```

1 ' "SEARCH/BAS"
2 '   CREATED 04/04/1983 BY: Bill Stanford
3 '   2515 Bunker Hill Dr., Baton Rouge, La. 70808
4 '   (504) 925-8188 or 926-8124
5 '   For use on TRS 80 MODEL 1[, 64K, Vrs 2.0
10 CLS
   : CLEAR 28000
   : GOSUB 10000
   : PRINT TAB(27)"* BASIC PROGRAM ANALYSIS *"
   : GOTO 900
50 PRINTCL;
   : Z=INKEY$
   : IF Z="" THEN 50 ELSE RETURN
100 PRINT@240,;
   : FOR V=1 TO 5
   : PRINT BL
   : NEXT
   : RETURN
900 PRINT@160,BA"> ENTER ASCII FILE NAME ";
   : INPUT D
910 PRINT
   : PRINT C2 "> READING ASCII FILE"
   : OPEN"I",1,D
920 N=1
930 IF EOF(1) THEN 990
940 LINE INPUT#1, A(N)
950 N=N+1
960 GOTO 930
990 CLOSE
1000 PRINT@320, BA+W " S E L E C T "+B
   : PRINT
   : PRINT TAB(30)W" L"BD"IST PROGRAM"
   : PRINT
   : PRINT TAB(30) W" S" BD "EARCH THE PROGRAM"
   : PRINT
   : PRINT TAB(30) W " F1 " B " START OVER"
   : PRINT
   : PRINT TAB(30) W" F2 "B" EXIT"
1005 FOR V=1 TO V2
   : AL(V)=""
   : NEXT
1010 PRINT@333,;
   : GOSUB 50
   : Z%=INSTR("LS"+C1+C2,Z)
   : IF Z%=0 THEN 1010
1020 ON Z% GOTO 2000,3000,10,1050
1050 CLOSE
   : CLEAR
   : CLEAR(A)
   : CLEAR 1000
   : CLS
   : END
2000 PRINT C2
   : FOR V=1 TO N
   : LPRINT A(V)

```

```

   : NEXT
   : GOTO 1000
3000 PRINT@160, BA "> SEARCH LINES FOR ";
   : LINE INPUT BZ
3005 V2=0
   : AA=C2+"PROGRAM: "+D+" PHRASE: "+BZ
   : PRINT@160, BL+AA
3010 PRINT@720,C2+L1
   : FOR V=1 TO N
   : IF INSTR(A(V),BZ)=0 THEN 3070
3020 FOR V1=1 TO 6
   : IF MID$(A(V),V1,1) <> CHR$(32) THEN 3050
3030 V2=V2+1
   : AL(V2)=MID$(A(V),1,V1)
   : V1=6
3050 NEXT V1
3060 PRINT AL(V2),;
3070 NEXT V
4000 GOSUB 100
4005 PRINT@640,"CHOOSE" SPC(9) W" V" BD "FEW" SPC(5)
   W" P" BD "RINT LINES" SPC(5) W" L" BD "IST
   NUMBERS" SPC(5) W " E" BD "XIT"
4010 PRINT@647,;
   : GOSUB 50
   : Z%=INSTR("VPLE",Z)
   : IF Z%=0 THEN 4010
4020 ON Z% GOTO 4030,5000,5100,1000
4030 PRINT@240, "> ENTER LINE NO. ";
   : INPUT LN%
4040 FOR V1=1 TO N
   : IF VAL(LEFT$(A(V1),6)) <> LN% THEN NEXT
   : GOTO 4030
4050 GOSUB 100
   : PRINT@320,A(V1)
   : V1=N
   : NEXT
   : GOTO 4005
5000 LPRINT"> "AA
   : LPRINT
5010 V1=1
5020 FOR V3=1 TO V2
5030 IF VAL(AL(V3)) <> VAL(LEFT$(A(V1),6)) THEN 5050
5040 LPRINT A(V1)
   : GOTO 5080
5050 V1=V1+1
   : IF V1 > N THEN 5070
5060 GOTO 5030
5070 LPRINT AL(V3)" NOT FOUND"
5080 NEXT V3
5090 LPRINT
   : LPRINT
   : GOTO 4010
5100 LPRINT"> "AA
   : LPRINT
5110 FOR V3=1 TO V2
5120 LPRINT "LINE NO. --- " AL(V3)
5130 NEXT
5140 LPRINT
   : LPRINT
   : GOTO 4010
10000 CLS
   : DEFSTR A-L,W,Z
   : DEFINT N,V
10002 DIM A(500),AL(70)
10004 C1=CHR$(1)
   : C2=CHR$(2)
   : W=CHR$(26)
   : B=CHR$(25)
   : BD=B+CHR$(157)
   : BL=B+CHR$(23)
   : BA=B+CHR$(24)
10006 L1=STRING$(79,61)
10018 RETURN

```

Perpetual Calendar for the Model II

Jerry A. Kroeger
249 South 84th St.
Lincoln, NE 68510

Our thanks to Mr. Kroeger for submitting this version of the perpetual calendar for the Model II.

```

10 GOTO 40
   ' PERPETUAL CALENDER
20 ' LINE 1000 CAN BE CHANGED TO PRINT
   ** ON HOLIDAY DATES
30 SAVE "PCAL/BAS"
   ' HANDY WHEN WORKING ON A PROGRAM
   - SAVE IT BY TYPING 'RUN 30'
   YOU NEVER SPELL THE NAME WRONG AND IT'S FAST
40 CLEAR 400
   : CLS
   ' FROM APRIL 1982 MICROCOMPUTER NEWS
   - ADAPTED FROM COLOR COMPUTER TO THE MODEL II
   BY DR JERRY A KROEGER, 249 CHERRYHILL BLVD,
   SUITE 5, LINCOLN, NE 68510
50 SYSTEM"FORMS X
60 CY$="1982" 'CURRENT YEAR
70 YR$=CY$
80 DIM HOL$(31)
90 ED=99
   : LM=31
100 MH$="0414040303230411033104180408032804
   160405032504130402032204100330041704070327"
110 DY$="000031059090120151181212243273304334"
120 MN$="JANUARY FEBRUARY MARCH APRIL MA
   Y JUNE JULY AUGUST SEPTEMBER OC
   TOBER NOVEMBER DECEMBER"
130 AD$="SUNDAY MONDAY TUESDAY WEDNESDA
   Y THURSDAY FRIDAY SATURDAY "
140 DZ$=" SUN MON TUE WED THU FRI SAT "
150 CLS 'BEGIN
160 PRINT
   : PRINT
   : PRINT
170 PRINT TAB(30);"PERPETUAL CALENDER"
180 PRINT
   : PRINT
190 PRINT TAB(25);" ENTER A DATE (YEARS 1753- )"
200 PRINT
210 PRINT TAB(25);" (FORMATS: MM/DD, MM/DD/YYYY,"
220 PRINT TAB(25);" MM/DD/YY, MM/YYYY, OR JUST MM)"
230 PRINT
   : PRINT
240 PRINT TAB(30);"ENTER DATE OR END";
   : INPUT DT$
250 PRINT
   : PRINT TAB(30);"DO YOU WANT A PRINT OUT ";
   : INPUT R$
260 IF LEFT$(R$,1)="Y" THEN SYSTEM "DUAL ON"
270 LL=LEN(DT$)
280 IF DT$="END" THEN 2710
290 IF LL=0 THEN 150
300 P1=INSTR(1,DT$,"/")
   : P2=INSTR(P1+1,DT$,"/")
310 IF P1=0 THEN MO=VAL(DT$)
   : DA=1
   : GOTO 380
320 MO=VAL(LEFT$(DT$,P1-1))
330 IF P2=0 THEN 370
340 DA=VAL(MID$(DT$,P1+1,(P2-1)-P1))
350 IF LL-P2>3 THEN YR$=RIGHT$(DT$,4)
   ELSE YR$=STR$(VAL("19"+RIGHT$(DT$,2)))

```

```

360 GOTO 380
370 IF LL-P1>3 THEN YR$=RIGHT$(DT$,4)
   : DA=1 ELSE YR$=CY$:DA=VAL(RIGHT$(DT$,LL-P1))
380 YR=VAL(YR$)
390 ' YEARSHIFT
400 IF LL<5 AND YR$=CY$ AND MO<9 THEN YR=YR+1
   : YR$=STR$(YR) 'WILL ADVANCE YEAR AUTOMATICALLY
   AFTER SOME MONTH OTHER THAN DECEMBER IF DESIRED
410 '*****
420 '
430 IF YR<1753 AND SW=0 THEN GOSUB 1410
440 IF MO>12 OR MO<1 THEN DA=1
   : GOTO 1330
450 IF DA<1 THEN 1330
460 LP=0
470 IF (YR/100-INT(YR/100))=0 THEN I=INT(YR/400)*400
   ELSE I=INT(YR/4)*4
480 IF I=YR THEN LP=1
490 LD=365+LP
500 IF MO=2 THEN 550
510 IF MO=4 OR MO=6 OR MO=9 OR MO=11 THEN 580
520 IF DA>31 THEN YR$=STR$(VAL("19"+STR$(DA)))
530 LM=31
   : GOTO 610
540 '
550 LM=28+LP
560 IF DA>LM THEN 1330
570 GOTO 610
580 LM=30
590 IF DA>LM THEN 1330
600 ' PRINT ROUTINES
610 IF MO<3 THEN LP=0
620 N=MO*3
630 JUL=VAL(MID$(DY$,N-2,3))
640 JUL=JUL+DA+LP
650 N=MO*9
660 PM$=MID$(MN$,N-8,9)
670 DT=YR+INT((YR-1)/4)-INT((YR-1701)/100)+INT((YR-16
   01)/400)+JUL
680 IF P1=0 OR (P2=0 AND LL>5) THEN 860
690 IF DA>31 THEN 860
700 '
710 ' DAY PRINT ROUTINE
720 DW=(DT/7)
   : WKDY=INT((DW-INT(DW))*7+.5)
730 O1=WKDY*10+1
740 WKDY$=MID$(AD$,O1,10)
750 '
760 CLS
   : PRINT
   : PRINT
   : PRINT
770 PRINT TAB(25);"THE DATE ";DT$; " = ";WKDY$
780 IF LL>5 THEN 790
790 PRINT
   : JD$=YR$+"."+STR$(JUL)
800 PRINT TAB(25);" THE JULIAN DATE = ";JD$
810 PRINT
   : PRINT
   : PRINT TAB(25);"WOULD YOU LIKE TO SEE"
820 PRINT TAB(25);"THE WHOLE MONTH? (Y OR N) ";
   : INPUT R$
830 IF R$="Y" THEN 860
840 IF R$="N" THEN 150 ELSE DT$=R$
   : GOTO 270
850 '
860 'PRINT WHOLE MONTH
870 DD=0
   : HS=0
880 MS=(DT-(DA-1))/7
890 D1=INT((MS-INT(MS))*7+.5)
900 CLS
910 PRINT TAB(8);PM$;TAB(18)YR$
920 PRINT
930 PRINT DZ$
940 GOSUB 1180

```



```

950 PL$=""
960 FOR WK=1 TO 7
970 IF DD=D1 THEN DP=1
980 IF DP<10 THEN DP$=" "+STR$(DP) ELSE DP$=STR$(DP)
990 IF DP=0 THEN DP$=" "
1000 HS=1
    : IF HOL$(DP)<>"" THEN DP$=" *"
    ' PRINTS ** FOR HOLIDAY DATE
1010 IF HOL$(DP)<>"" THEN DP$=CHR$(26)+DP$+CHR$(25)
    ' PRINTS HOLIDAY DATES ON SCREEN
    IN REVERSE VIDEO
1020 PL$=PL$+" "+DP$
1030 DD=DD+1
1040 IF DP<>0 THEN DP=DP+1
1050 IF DP>LM THEN DP=0:DP$=" "
1060 NEXT WK
1070 PRINT PL$
    ' ADD A PRINT HERE TO SPACE DATE LINES
1080 IF DP=0 THEN 1100
1090 GOTO 950
1100 PRINT
1110 ' IF HS=0 THEN 170
1120 GOTO 1490
1130 IF R$="" THEN 1490
1140 DT$=R$
    : GOTO 270
1150 IF HOL$(DP)<>"" THEN HOL$(DP)="EASTER SUNDAY"
    +CHR$(13)+" & "+HOL$(DP)
    ELSE HOL$(DP)="EASTER SUNDAY"
1160 ED=99
1170 RETURN
1180 '
1190 ' SET MONTH'S HOLIDAYS
1200 GOSUB 2120
1210 GOSUB 1700
1220 RESTORE
1230 READ HDT$,HOL$
1240 IF HDT$="END" THEN RETURN
1250 MT=VAL(LEFT$(HDT$,2))
1260 IF LEN(HDT$)>5 AND YR<>VAL(RIGHT$(HDT$,4))
    THEN 1230
1270 IF MT<>MO THEN 1230
1280 HDT$=LEFT$(HDT$,5)
1290 DX=VAL(RIGHT$(HDT$,2))
1300 IF HOL$(DX)="" THEN HOL$(DX)=HOL$ ELSE HOL$(DX)=
    HOL$(DX)+CHR$(13)+" & "+HOL$
1310 GOTO 1230
1320 '
1330 CLS
    : PRINT@(12,35),"INVALID DATE"
1340 IF DA>LM THEN PRINT TAB(25);
    "FORMATS ARE:MM/YYYY OR MM/DD,"
    : PRINT TAB(30);" - NOT MM/YY!"
1350 '
1360 S9=1
1370 FOR D=1 TO 600
    : NEXT
1380 IF DA>LM AND S9<4 THEN S9=S9+1
    : GOTO 1370
1390 GOTO 150
1400 '
1410 'TOO OLD
1420 CLS
    : PRINT @33,"*** CAUTION ***"
1430 PRINT
    : PRINT
    : PRINT TAB(10);
    "OUR PRESENT CALENDAR WAS ADOPTED IN 1752
    - ACCURACY"
1440 PRINT TAB(10);
    "FOR DATES EARLIER THAN 1753 MAY REQUIRE
    CONVERSION"
1450 PRINT
    : PRINT TAB(10);
    "(MOST DATES IN AMERICAN HISTORY HAVE
    ALREADY BEEN CONVERTED)"
1460 PRINT
    : PRINT
    : PRINT TAB(25);"PRESS <ENTER> TO CONTINUE ";
    : INPUT R$
1470 SW=1
1480 RETURN
1490 ' PRINT HOLIDAYS
1500 IF HS=0 THEN 1670
1510 PRINT" IMPORTANT DATE(S) IN ";PM$
1520 PRINT STRING$(30,"*")
1530 FOR H=1 TO LM
1540 IF HOL$(H)="" THEN 1560
1550 PRINT H;TAB(5) HOL$(H)
1560 NEXT H
1570 PRINT "";
1580 R$=""
    : PRINT
    : PRINT "ENTER DATE OR <ENTER> FOR NEXT MONTH ";
    : INPUT R$
1590 PRINT "NEXT DATE OR END ";
    : INPUT R$
1600 X=4 'FILL IN YOUR OWN VALUE FOR LINES SPACED
    BETWEEN CALENDER MONTHS
1610 FOR I=1 TO X
    : PRINT
    : NEXT
1620 IF R$="" THEN DT$=STR$(VAL(DT$)+1)
    : MO=MO+1
1630 IF MO=13 THEN MO=1
    ' WILL AUTOMATICALLY ADVANCE MONTH FROM DECEMBER
    TO JANUARY WHEN <ENTER> IS THE MONTH INPUT
1640 IF VAL(DT$)=13 THEN DT$=STR$(1)
    : YR$=STR$((VAL(YR$)+1))
1650 IF R$="" THEN GOTO 270
1660 DT$=R$
    : GOTO 270
1670 PRINT" NO HOLIDAYS, BIRTHDAYS, OR ANYTHING AT
    ALL IN ";PM$
1680 GOTO 1570
1690 '
1700 'MOVABLE HOLIDAYS
1710 ON MO GOSUB 1720,1740,2010,2010,1770,1860,1720,
    1720,1900,1980,1930,1720
1720 RETURN
1730 '
1740 IF D1<2 THEN HX=16-D1 ELSE HX=23-D1
1750 HOL$(HX)="WASHINGTON'S BIRTHDAY"
1760 RETURN
1770 HX=15-D1
1780 IF D1=0 THEN HX=8
1790 HOL$(HX)="MOTHER'S DAY"
1800 HX=30-D1
1810 IF D1=6 THEN HX=31
1820 HOL$(HX)="MEMORIAL DAY *"
1830 HX=21-D1
1840 HOL$(HX)="ARMED FORCES DAY"
1850 RETURN
1860 HX=22-D1
1870 IF D1=0 THEN HX=15
1880 HOL$(HX)="FATHER'S DAY"
1890 RETURN
1900 IF D1<2 THEN HX=2-D1 ELSE HX=9-D1
1910 HOL$(HX)="LABOR DAY *"
1920 RETURN
1930 IF D1<2 THEN HX=3-D1 ELSE HX=10-D1
1940 HOL$(HX)="ELECTION DAY"
1950 IF D1>4 THEN HX=33-D1 ELSE HX=26-D1
1960 HOL$(HX)="THANKSGIVING DAY *"
1970 RETURN
1980 IF D1<2 THEN HX=9-D1 ELSE HX=16-D1
1990 HOL$(HX)="COLUMBUS DAY"
2000 RETURN
2010 ' EASTER SUNDAY
2020 FM=YR/19

```

(Continued on page 44)

XENIX Notes

MODEL 100 IN THE TERMCAP FILE

Some versions of Xenix do not have an entry for the Model 100 in the termcap file. To add it edit the /etc/termcap file with an editor to add the following:

```
rl|trs100|TRS-80 Model 100: \
:am:bs:xt:co#40:li#8:al= \EL;dl= \EM;cd= ^L:ce= \
EK:cl= \EE:cm= \EY%+ %+
:\nd= ^\ :dn= ^< :up= \EA
:se= \Eq:so= \Ep:kl= ^]:kr= ^\ :ku= ^^ :kd= ^<:
```

If you plan on extensive use of the Model 100 with Xenix, place this within one of the first two or three entries.

INCREASING SWAP SPACE ON A XENIX SYSTEM

Overview:

1. Make a save of the file system using either the Xenix save command or the TSH save.
2. Mount and modify the .profile file on the installation boot floppy.
3. Format the hard disk and reinstall Xenix using the modified boot disk.

Step by Step Instructions:

1. Save the file system using either of the recommended save procedures.
2. Insert the installation boot disk in drive 0.
3. Type "/etc/mount /dev/fd0 /mnt" to mount the disk.
4. Type "cd /mnt" to enter the file system on the floppy disk.
5. Type "ed .profile".
6. Type "81" to set the current line to 81. The line displayed should read "SIZE = 'expr \$SIZE - 2048'". 2048 is the number of blocks allocated for swap space.
7. Type "s/2048/2500/"
8. Type "w"
9. Type "q"
10. Type "cd /"
11. Type "/etc/umount /dev/fd0"
12. Reformat the hard disk and initialize it with the modified boot disk.

PROBLEMS WITH PRINTING

Under Xenix if all permission levels are set correctly and there are no lock files but the user still can't print, do the following:

```
Login as root
cd /
/usr/lib/lpd
```

This will initialize the line printer. If it still doesn't work, reinstall the line printer files.

MULTIPLAN DEFAULT

Multiplan for Xenix is set to a default of 20K (approx.) per sheet per user whether three users are logged on or not. To change this default do mp -m 32768 to get the maximum memory for one sheet. This is a temporary change and will be reset to the default the next time the system is shutdown. To permanently change the defaults, edit the usr/bin/mp file and change the default from some 20K to whatever as long as it is

less than 32768. Be careful with this command; if there is more than one mp user and the defaults have been changed, you can easily run out of swap space and crash the system.

Perpetual Calendar (From page 43)

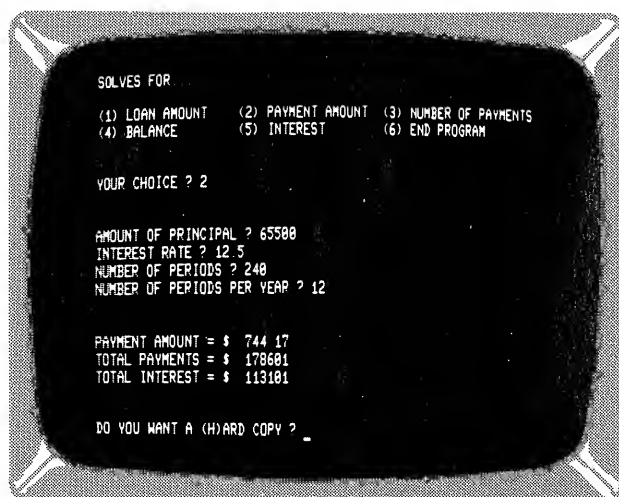
```
2030 PFM=INT((FM-INT(FM))*19+.5)
2040 PX=PFM*4+1
2050 PFM$=MID$(MH$,PX,4)
2060 EM=VAL(LEFT$(PFM$,2))
      : EH=VAL(RIGHT$(PFM$,2))
2070 IF EM=MO THEN ED=EH ELSE ED=99
2080 D2=D1
      : IF D2=0 THEN D2=7
2090 IF EM=3 AND M0=4 AND EH>31-D2 THEN ED=0
2100 RETURN
2110 '
2120 ' CLEAR HOLIDAYS
2130 FOR IX=1 TO 31
2140 HOL$(IX)=" "
2150 NEXT
2160 RETURN
2170 '
2180 ' HOLIDAYS, ETC.
2190 DATA 04/15, INCOME TAXES DUE !!!
2200 DATA 01/01, NEW YEARS DAY **
2210 DATA 07/04, INDEPENDENCE DAY
2220 DATA 12/25, CHRISTMAS DAY **
2230 DATA 02/12, LINCOLN'S BIRTHDAY
2240 DATA 02/14, VALENTINE'S DAY
2280 DATA 03/17, ST. PATRICK'S DAY
2290 DATA 06/14, FLAG DAY
2410 DATA 08/29, LARRY'S BIRTHDAY
2430 DATA 10/24, CAROL'S BIRTHDAY
2440 DATA 10/23, ANNIVERSARY
2450 DATA 03/10, WAYNE'S BIRTHDAY
2460 DATA 11/27, RON'S BIRTHDAY
2470 DATA 11/03, JUANITA'S BIRTHDAY
2480 DATA 12/09, GLEN & JUANITA'S ANNIVERSARY
2490 DATA 07/25, GLEN'S BIRTHDAY
2510 DATA 10/31, HALLOWEEN
2520 DATA 11/11, VETERAN'S DAY
2530 DATA 03/20, FIRST DAY OF SPRING
2540 DATA 06/21, FIRST DAY OF SUMMER
2550 DATA 09/22, FIRST DAY OF AUTUMN
2560 DATA 12/21, FIRST DAY OF WINTER
2570 DATA 12/07, PEARL HARBOR DAY
2700 DATA END, ***
2710 SYSTEM"DUAL OFF"
      : SYSTEM "DIR"
```



Two Programs for the Model 4

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Mr. Giordano submitted several programs for the Model 4. We have selected his LOAN TERMS and STATISTICS programs for publication this month. LOAN TERMS will calculate the loan amount, payment amount, number of payments, balance or interest, depending on the input. STATISTICS calculates various factors including median, mid/range, mean, mean deviation, variance, standard deviation, and skewness.



Loan Terms

```

2 REM LOAN TERMS BY C. GIORDANO
  * THIS PROGRAM IS SELF EXPLANATORY
3 CLS
10 PRINT
  : PRINT
  : PRINT "SOLVES FOR..."
15 PRINT
20 PRINT "(1) LOAN AMOUNT";TAB(20); "(2) PAYMENT
  AMOUNT";TAB(40); "(3) NUMBER OF PAYMENTS"
25 PRINT "(4) BALANCE";TAB(20); "(5) INTEREST";
  TAB(40); "(6) END PROGRAM"
27 PRINT
  : PRINT
30 INPUT "YOUR CHOICE ";CH
40 ON CH GOTO 65,140,200,250,350,460
65 PRINT
  : PRINT
70 INPUT "PAYMENT AMOUNT ";P
  : INPUT "INTEREST RATE ";I
  : INPUT "NUMBER OF PERIODS ";N
  : INPUT "NUMBER OF PERIODS PER YEAR ";M
80 I=.01*I/M
  : A=P*((1-(1+I)^-N)/I)
  : A=INT(100*A+.5)/100
85 PRINT
  : PRINT
90 PRINT "LOAN AMOUNT = $ ";A
  : J=P*N
  : W=J-A

```

```

  : PRINT "TOTAL PAYMENTS = $ ";J
  : PRINT "TOTAL INTEREST = $ ";W
92 PRINT
  : PRINT
95 INPUT "DO YOU WANT A (H)ARD COPY ";A$
  : IF A$="H" THEN 97 ELSE 10
97 LPRINT
  : LPRINT
  : LPRINT TAB(31); "*** LOAN TERMS ***"
  : LPRINT
  : LPRINT
  : LPRINT
100 LPRINT
  : LPRINT "PAYMENT PER PERIOD = $ ";P
  : LPRINT
  : LPRINT "INTEREST RATE = ";I*100*M; "%"
  : LPRINT
  : LPRINT "NUMBER OF PERIODS = ";N
  : LPRINT
  : LPRINT "NUMBER OF PERIODS PER YEAR = ";M
110 LPRINT
  : LPRINT "LOAN AMOUNT = $ ";A
  : LPRINT
  : LPRINT "TOTAL PAYMENTS = $ ";J
  : LPRINT
  : LPRINT "TOTAL INTEREST = $ ";W
  : GOTO 10
140 PRINT
  : PRINT
150 INPUT "AMOUNT OF PRINCIPAL ";A
  : INPUT "INTEREST RATE ";I
  : INPUT "NUMBER OF PERIODS ";N
  : INPUT "NUMBER OF PERIODS PER YEAR ";M
155 I=.01*I/M
  : P=A*(I/(1-(1+I)^-N))
  : P=INT(100*P+.5)/100
  : J=P*N
  : W=J-A
157 PRINT
  : PRINT
160 PRINT "PAYMENT AMOUNT = $ ";P
  : PRINT "TOTAL PAYMENTS = $ ";J
  : PRINT "TOTAL INTEREST = $ ";W
170 GOTO 92
200 CLEAR
  : PRINT
  : PRINT
  : INPUT "PAYMENT AMOUNT ";P
  : INPUT "AMOUNT OF PRINCIPAL ";A
  : INPUT "INTEREST RATE ";I
  : INPUT "NUMBER OF PERIODS PER YEAR ";M
205 ON ERROR GOTO 230
210 I=.01*I/M
  : N=-((LOG(1-I*A/P))/(LOG(1+I)))
  : N=INT(100*N+.5)/100
215 J=P*N
  : W=J-A
219 PRINT
  : PRINT
220 PRINT "NUMBER OF PAYMENTS = ";N
  : PRINT "TOTAL PAYMENTS = $ ";J
  : PRINT "TOTAL INTEREST = $ ";W
225 GOTO 92
230 PRINT
  : PRINT
  : PRINT
  : PRINT "*** THIS LOAN CANNOT BE AMORTIZED -
  TRY DIFFERENT TERMS ***"
  : GOTO 200
250 PRINT
  : PRINT
  : INPUT "AMOUNT OF PRINCIPAL ";A
  : INPUT "INTEREST RATE ";I
  : INPUT "PAYMENT PER PERIOD ";P
  : INPUT "PERIODS PER YEAR ";M
  : INPUT "TARGET PERIOD ";N

```

```

260 I=.01*I/M
   : B=((A*I-P)*(1+I)^N+P)/I
   : B=INT(100*B+.5)/100
   : C=A-B
   : J=P*N
   : W=J-C
   : C=INT(100*C+.5)/100
   : J=INT(100*J+.5)/100
   : W=INT(100*W+.5)/100
270 PRINT
   : PRINT
   : PRINT "BALANCE = $ ";B
   : PRINT "PAID AMOUNT = $ ";C
   : PRINT "TOTAL PAYMENTS = $ ";J
   : PRINT "TOTAL INTEREST = $ ";W
280 PRINT
   : PRINT
   : INPUT "DO YOU WANT A (H)ARD COPY ";A$
   : IF A$="H" THEN 290 ELSE 10
290 LPRINT
   : LPRINT
   : LPRINT TAB(31); "*** LOAN TERMS ***"
   : LPRINT
   : LPRINT
   : LPRINT
300 LPRINT "BALANCE = $ ";B
   : LPRINT
   : LPRINT "PAID AMOUNT = $ ";C
   : LPRINT
   : LPRINT "TOTAL PAYMENTS = $ ";J
   : LPRINT
   : LPRINT "TOTAL INTEREST = $ ";W
   : LPRINT
   : LPRINT "PAYMENT PER PERIOD = $ ";P
   : LPRINT
   : LPRINT "INTEREST RATE = ";I*100*M; "%"
310 LPRINT
   : LPRINT "NUMBER OF PERIODS = ";N
   : LPRINT
   : LPRINT "LOAN AMOUNT = $ ";A
   : LPRINT
   : LPRINT "NUMBER OF PERIODS PER YEAR = ";M
320 GOTO 10
350 CLEAR
   : PRINT
   : PRINT
   : INPUT "AMOUNT OF PRINCIPAL ";A
   : INPUT "PAYMENT PER PERIOD ";P
   : INPUT "NUMBER OF PERIODS ";N
   : INPUT "PERIODS PER YEAR ";M
355 ON ERROR GOTO 500
360 F=A/P
   : Q=1/F-F/(N^2)
380 L=1-(1+Q)^-N
   : D=(Q*F)-L
390 Z=D/(L/Q-(N*(1+Q)^(-N-1)))
400 Q=Q-Z
   : IF ABS(Z)-10^-7>=0 THEN 380
410 I=Q*M*100
   : S=I
   : S=INT(S)+INT((S-INT(S))*100+.5)/100
415 PRINT
   : PRINT
420 I=S
   : J=P*N
   : W=J-A
430 PRINT
   : PRINT
   : PRINT "INTEREST RATE = ";I; "%"
440 PRINT "TOTAL PAYMENTS = $ ";J
   : PRINT "TOTAL INTEREST = $ ";W
450 I=.01*I/M
   : GOTO 92
460 PRINT
   : PRINT
   : PRINT "*** PROGRAM TERMINATION ***"

```

```

: STOP
500 PRINT
   : PRINT
   : PRINT
   : PRINT "*** THIS LOAN CANNOT BE AMORTIZED
- TRY DIFFERENT TERMS ***"
   : GOTO 350

```

Statistics

```

3 REM STATISTICS BY C.GIORDANO
5 CLEAR 2000
10 DIM D(1000)
30 CLS
35 PRINT "PRESS <E> TO END INPUT OF DATA"
   : PRINT
   : PRINT
40 N=N+1
50 PRINT "ITEM NUMBER ";N
60 INPUT "DATA VALUE----->";A$
   : IF A$="E" THEN GOTO 90
70 D(N)=VAL(A$)
75 IF D(N)>0 THEN PO=PO+1
77 IF D(N)=0 THEN ZE=ZE+1
79 IF D(N)<0 THEN NE=NE+1
83 IF N=1 THEN LO=D(N)
   : HI=D(N)
84 IF D(N)>HI THEN HI=D(N)
85 IF D(N)<LO THEN LO=D(N)
87 GOTO 40
90 N=N-1
125 RN=HI-LO
130 MR=LO+((HI-LO)/2)
180 FOR P=1 TO N
   : S1=S1+D(P)
   : S2=S2+(D(P)*D(P))
   : NEXT P
185 AV=S1/N
190 FOR P=1 TO N
   : IF D(P)<AV THEN GOTO 195 ELSE IF D(P)>AV
   THEN S4=S4+(D(P)-AV)
   : GOTO 200
195 IF D(P)<AV THEN S5=S5+(AV-(D(P)))
   : GOTO 200
200 NEXT P
210 S6=S4+S5
   : M3=S6/N
220 V1=(S2-N*AV*AV)/(N-1)
   : DE=SQR(V1)
230 V2=(S2-N*AV*AV)/N
   : D1=SQR(V2)
240 G=S2-N*AV*AV
   : G1=(G/(N*(N-1)))
   : EM=SQR(G1)
250 FOR P=1 TO N
   : QQ=QQ+(D(P)-AV)^3
   : GG=GG+(D(P)-AV)^4
   : NEXT P
252 SK=(QQ/N)/D1^3
   : KU=((GG/N)/V2^2)-3
253 PRINT
   : INPUT "(V)IDEO DISPLAY OR (H)ARD COPY ";ZZ$
   : IF ZZ$="V" THEN GOTO 254 ELSE IF ZZ$="H"
   THEN GOTO 1000
254 CLS
   : PRINT@910, "PROCESSING DATA"
   : FOR L=1 TO N-1
256 FOR C=1 TO N-L
258 IF D(C)<=D(C+1) THEN 266
260 X=D(C)
262 D(C)=D(C+1)
264 D(C+1)=X
266 NEXT C
268 NEXT L

```

```

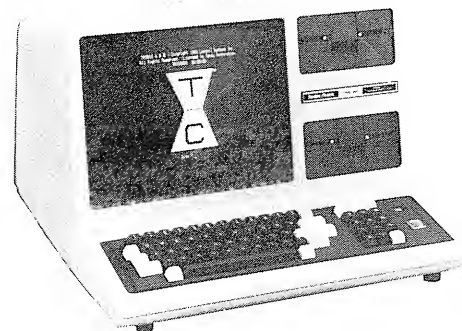
270 CLS
: PRINT@886, "PRESS <ENTER> TO START DISPLAY
* ANY OTHER KEY TO STOP OR RESUME DISPLAY"
: INPUT G$
272 CLS
: PRINT "NBR";TAB(15); "FREQUENCY";TAB(30);
"SORTED DATA";TAB(45); "PERCENTILE";TAB(60);
"TOT/PERCENTILE"
: PRINT
: PRINT
273 FOR P=1 TO N
: FOR H=1 TO 500
: NEXT H
275 GOSUB 2000
276 A=A+1
277 IF D(P)=D(P-1) THEN Z=Z+1 ELSE Z=1
278 IF D(P)<>D(P-1) THEN PRINT STRING$(80,"-")
279 PRINT A; TAB(15);Z; TAB(30);D(P); TAB(45);
Z*100/N; TAB(60);A*100/N
280 NEXT P
290 PRINT
: INPUT "PRESS <ENTER> TO SEE STATISTICS ";S$
: CLS
291 PRINT "NUMBER OF VALUES = ";N
: PRINT "LOW = ";LO
: PRINT "HIGH = ";HI
: PRINT "NUMBER OF POSITIVE VALUES = ";PO
: PRINT "NUMBER OF ZERO VALUES = ";ZE
: PRINT "NUMBER OF NEGATIVE VALUES = ";NE
: PRINT "RANGE = ";RN
: PRINT "MID/RANGE = ";MR
295 IF N/2=INT(N/2)+1 THEN 300 ELSE
IF N/2=INT(N/2) THEN 340
300 R=N/2
: R=INT(R)+1
310 PRINT "MEDIAN = ";D(R)
320 GOTO 345
340 M1=D(N/2)
: R=N/2
: R=INT(R)+1
: J=(M1+D(R))/2
342 PRINT "MEDIAN = ";J
345 PRINT "SUM OF THE VALUES = ";S1
: PRINT "SUM OF THE SQUARES OF THE VALUES = ";S2
: PRINT "MEAN = ";AV
: PRINT "MEAN DEVIATION = ";M3
: PRINT "UNBIASED ESTIMATE OF THE STANDARD
ERROR OF THE MEAN = ";EM
347 PRINT "VARIANCE = ";V2
: PRINT "STANDARD DEVIATION = ";D1
: PRINT "UNBIASED ESTIMATE OF VARIANCE = ";V1
: PRINT "UNBIASED ESTIMATE OF STANDARD
DEVIATION = ";DE
: PRINT "SKEWNESS = ";SK
: PRINT "KURTOSIS = ";KU
450 PRINT
: PRINT
: INPUT "PRESS <ENTER> FOR NEW SET OF DATA ***
PRESS <A> TO SEE CURRENT SET AGAIN ";S$
455 A=0
: IF S$="A" THEN 272 ELSE 5
500 STOP
1000 CLS
: PRINT@910, "PROCESSING HARD COPY"
1001 FOR L=1 TO N-1
1002 FOR C=1 TO N-L
1003 IF D(C)<=D(C+1) THEN 1007
1004 X=D(C)
1005 D(C)=D(C+1)
1006 D(C+1)=X
1007 NEXT C
1008 NEXT L
1009 LPRINT
: LPRINT "NBR"; TAB(15); "FREQUENCY"; TAB(30);
"SORTED DATA"; TAB(45); "PERCENTILE"; TAB(60);
"TOT/PERCENTILE"

```

```

: LPRINT
: LPRINT
1010 FOR P=1 TO N
1011 A=A+1
1012 IF D(P)=D(P-1) THEN Z=Z+1 ELSE Z=1
1014 IF D(P)<>D(P-1) THEN LPRINT STRING$(80,"-")
1016 LPRINT A; TAB(15);Z; TAB(30);D(P); TAB(45);
Z*100/N; TAB(60); A*100/N
1018 NEXT P
1029 LPRINT
: LPRINT
1030 LPRINT
: LPRINT
: LPRINT TAB(32); "*** STATISTICS ***"
: LPRINT
: LPRINT
: LPRINT
1040 LPRINT "NUMBER OF VALUES = ";N
: LPRINT "LOW = ";LO
: LPRINT "HIGH = ";HI
1050 LPRINT "NUMBER OF POSITIVE VALUES = ";PO
: LPRINT "NUMBER OF ZERO VALUES = ";ZE
: LPRINT "NUMBER OF NEGATIVE VALUES = ";NE
1070 LPRINT "RANGE = ";RN
1090 LPRINT "MID/RANGE = ";MR
1100 IF N/2=INT(N/2)+1 THEN 1110 ELSE
IF N/2=INT(N/2) THEN 1140
1110 R=N/2
: R=INT(R)+1
1120 LPRINT "MEDIAN = ";D(R)
1125 GOTO 1170
1140 M1=D(N/2)
: R=N/2
: R=INT(R)+1
: J=(M1+D(R))/2
1150 LPRINT "MEDIAN = ";J
1170 LPRINT "SUM OF THE VALUES = ";S1
: LPRINT "SUM OF THE SQUARES OF THE
VALUES = ";S2
1270 LPRINT "MEAN = ";AV
: LPRINT "MEAN DEVIATION = ";M3
: LPRINT "UNBIASED ESTIMATE OF THE
STANDARD ERROR OF THE MEAN = ";EM
1280 LPRINT "VARIANCE = ";V2
: LPRINT "STANDARD DEVIATION = ";D1
1290 LPRINT "UNBIASED ESTIMATE OF VARIANCE = ";V1
: LPRINT "UNBIASED ESTIMATE OF
STANDARD DEVIATION = ";DE
1300 LPRINT
: LPRINT "SKEWNESS = ";SK
: LPRINT "KURTOSIS = ";KU
1440 CLS
: INPUT "PRESS <ENTER> TO INPUT NEW
SET OF DATA ";S$
: GOTO 5
2000 J$=INKEY$
: IF J$="" THEN RETURN
2010 J$=INKEY$
: IF J$="" THEN 2010
2020 RETURN

```



Reviewing VisiCalc Files

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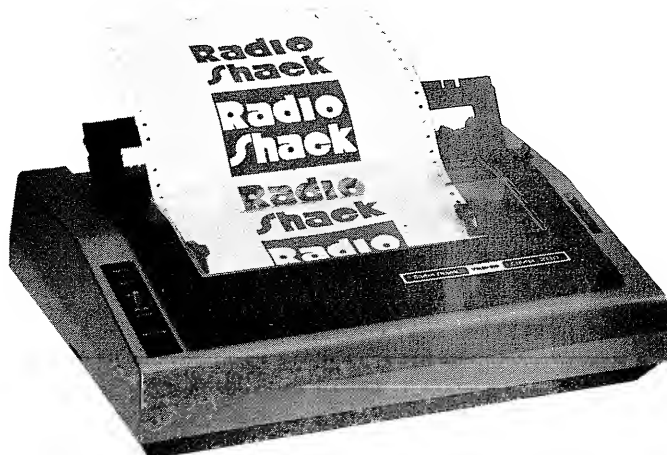
I wrote this program in response to several questions that came up in using the VisiCalc software I purchased. I wanted a way to:

1. Review all of the formulas in large spreadsheets without excessively time consuming bouncing around with the GOTO command.
2. List the contents of spreadsheets more compactly than provided for by the TRSDOS LIST FILE/VC (ASCII,PRT) function for purposes of documenting implicit assumptions in worksheets developed for clients.
3. List contents neatly onto a sheet-fed printer (DWP-410). (*Editor's note: The program worked with our DMP-200 also.*)
4. Transfer formulas and algorithms developed with VisiCalc economically into other VC spreadsheets (not possible with the S#S command which transfers results only, nor the SS command which transfers the entire spreadsheet).
5. Set the stage for efficient writing of BASIC translations of the VC spreadsheets I use most.

The following program answered these questions to my satisfaction and I wanted to share the results with others, as I have found some ideas of interest contributed by others in your publication.

```
10 REM                                VCREAD
20 REM                                ROBERT E. GRUMBINE, 8-08-83
30 REM
40 REM Program was written for TRS-80
45 REM Model III 48K with at least one disk drive.
50 REM Language is BASIC 1.3. Note the screen
60 REM display time delay loop at 300, which can
70 REM be adjusted to suit the user, as can printer
80 REM line length IB at 190 and spaces between
90 REM elements at 290.
95 REM
100 CLEAR 20000
    : DEFSTR S
    : DEFINT I-K
    : DIM SV(1200)
110 CLS
    : PRINT "VCREAD by Robert E. Grumbine 8-8-83"
    : PRINT "No rights reserved"
    : PRINT
120 PRINT "The purpose of this program is to read a
    : /VC file from disk and"
    : PRINT "to prepare an orderly 'top down' 8-1/2
    : by 11 sheet listing of"
130 PRINT "the contents of the file including all of
    : the formulas and data"
    : PRINT "contents. Depending on length of the
    : VC file, BASIC will go"
140 PRINT "into its string space 'garbage collection'
    : mode from time to"
    : PRINT "time for about 60 seconds. At any other
    : time, in screen"
150 PRINT "display mode, the display can be
    : temporarily halted with"
    : PRINT "SHIFT@ and resumed with any other key."
    : PRINT
160 INPUT "WHAT IS NAME OF /VC FILE TO READ";SA
    : SA=SA+"/VC"
```

```
170 INPUT "OUTPUT TO PRINTER OR SCREEN (P/S)";S
180 IF S="S" THEN IB=64
    : GOTO 210
190 IF S="P" THEN IB=80
    : GOSUB 380
    : ELSE 170
200 ' READ ENTIRE VC FILE INTO ARRAY SV
210 OPEN "I",1,SA
    : IA=0
    : PRINT
    : PRINT "NOW READING FILE ";SA
220 IF EOF(1) THEN CLOSE 1
    : GOTO 260
230 IA=IA+1
    : INPUT#1,SV(IA)
    : SB=LEFT$(SV(IA),1)
240 IF SB=">" OR SB="/" THEN 220
250 SV(IA-1)=SV(IA-1)+","SV(IA)
    : IA=IA-1
    : GOTO 220
260 PRINT
    : PRINT "FILE ";SA;" READ IS COMPLETE"
270 ' BEGIN PRINTING VC FILE IN NATURAL ORDER
280 IC=0:SC=""
    : FOR I=IA TO 1 STEP -1
290     S=" "+SV(I)
    : ID=LEN(S)
300     IF IB<65 THEN FOR J=1 TO 100
    : NEXT J
310     IF IC+ID<IB THEN SC=SC+S
    : IC=IC+ID
    : GOTO 350
320     IF IB<65 THEN PRINT SC
    : SC=S
    : IC=ID
    : GOTO 350
330     IF IL>60 THEN GOSUB 380
340     LPRINT SC
    : SC=S
    : IC=ID
    : IL=IL+1
350 NEXT I
    : IF IB<65 THEN PRINT SC ELSE LPRINT SC
360 PRINT "ELEMENTS=";IA;" MEM=";MEM;
    : " UNUSED STR SPACE=";FRE(S)
    : CMD"S"
370 ' PAPER SETUP SUBROUTINE
380 PRINT
    : PRINT "LOAD PAPER FOR PRINTOUT OF FILE ";SA
390 INPUT "<ENTER> WHEN READY TO BEGIN PRINT";SG
400 LPRINT "LISTING OF CONTENT OF FILE ";SA;
    : " AS OF ";TIME$
410 LPRINT
    : LPRINT
    : IL=8
    : RETURN
```



Upgrading Profile III + To LDOS Floppy

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The Profile III + Hard Disk Upgrade (700-6203) converts Profile III + to LDOS 5.1.3. However, the upgrade is designed for use with the Radio Shack 5 meg hard disk. For those with the floppy disk version of LDOS 5.1.3, it is possible to upgrade Profile III + to Profile III + HD to run on floppy disk.

What is needed for the upgrade:

1. A backup of the Profile III + Hard Disk Upgrade
2. Backups of the TRSDOS Creation and Runtime Profile III + diskettes
3. A backup of the LDOS 5.1.3 diskette
4. A blank diskette

Throughout, boldface type indicates exactly what should be typed from LDOS Ready. All entries should be ended by hitting the **(ENTER)** key.

Turn on the Model III and boot the LDOS 5.1.3 diskette. Place the blank diskette in physical drive 1 and type:

FORMAT :1(NAME = "LDOS 513",CYL = 41,Q = N,ABS)

When the procedure is completed, then type:

BACKUP :0 :1

The program will caution that the cylinder counts differ and ask if mirror-image backup should be attempted. Type: **Y**

Now, all unnecessary files must be purged from this newly backed up disk. It will be termed "abbreviated diskette". Type:

PURGE :1 (S,I)

You will then be asked whether you want to purge every file on the abbreviated diskette. Answer Y for all files **EXCEPT** the following:

SYS0/SYS SYS1/SYS SYS2/SYS SYS3/SYS SYS4/SYS
SYS5/SYS SYS6/SYS SYS8/SYS SYS9/SYS SYS10/SYS
SYS11/SYS SYS12/SYS CONV/CMD

If you make a mistake and purge one of these files, write down the name of the file accidentally purged. If you do not purge all other files, retype the purge command and purge those files. To recreate an accidentally purged file, type:

BACKUP (filename):0 :1

Once you are finished, recheck the file directory to be sure that the abbreviated diskette contains the above files and no others. (Two other files, DIR/SYS and BOOT/SYS cannot be purged and must be on the diskette. Type:

DIR :1 (S,I)

If the files are not complete, or if there are extra files, go back and use the purge and backup commands until this is corrected. The upgrade will not work properly if there is a mistake at this stage. Then type:

SYSTEM (DRIVE = 4,DRIVER = "MOD3")

When prompted, type:

2

With this you have created an abbreviated version of the LDOS 5.1.3 diskette formatted with one extra track. It has also defined the upper drive on the Model III (physical drive 1) as logical drive 4. This is necessary because of the upgrade files.

Now remove the LDOS 5.1.3 diskette and place the abbreviated diskette into physical drive 0. Place the Profile III + HD Upgrade backup in physical drive 1. Type:

DO INSTALL

The program will begin transferring files. It prompts you to insert the TRSDOS Creation diskette into drive 4. Remove the Upgrade diskette and place the Creation diskette into physical drive 1 (logical drive 4). Do the same for the prompts for the Runtime diskette and for the Upgrade diskette. The conversion takes about 10 minutes. When the program returns to LDOS Ready type:

KILL UPG/JCL

Now remove all the diskettes. Place the LDOS 5.1.3 diskette into physical drive 0 and the abbreviated diskette into physical drive 1. Push the orange reset key, then type:

KILL CONV/CMD.RRW3:1

Then type:

BACKUP SYS7/SYS:0 :1

This completes the upgrade process. If you would like to use the type ahead feature that LDOS provides (see the Profile III Plus Hard Disk manual), type the following:

BACKUP KI/DVR:0 :1

Now remove the abbreviated diskette—it has now become a full-fledged Profile III + HD diskette. Place a write-protect tab on the diskette to prevent the Profile III + HD programs from writing files to the diskette—it has only about 1.5K of space.

I want to mention two other points. The diskette does not contain FORMAT/CMD or BACKUP/CMD. To format or backup diskettes, use the LDOS 5.1.3 diskette. To make a backup of the Profile III + HD diskette, use the "X" parameter of the backup command. (See BACKUP in the LDOS 5.1.3 manual). All the data files, the screens, print formats and indexes will be written to drive 1 on a formatted diskette.

The upgraded version of Profile III + has powerful sorting and indexing capacity not available on the TRSDOS version. The upgrade costs \$100.00.



Canning Labels

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Computers are particularly good at repetitive tasks and those involving a lot of arithmetic. Last fall when I made up several large batches of mincemeat, relish, and jam, I found a classic repetitive task. Five to twenty labels for each of five to twenty batches of canning is too small and diverse a job for a print shop, but it certainly is repetitive enough to be time-consuming and boring!

The following program, which ran under TRSDOS 1.3 and probably would run under any Radio Shack BASIC, prints out plain, neat labels with as much or as little detail as you want. I used a Line Printer IV and was glad of the descenders, but even an all-capitals printer would do the job. It is designed for 40 character rows so that small printers are not so likely to need a modified edition.

```
100 CLEAR 1000
109 PRINT "This program will write your canning
      labels for you. You may have up to ten lines
      per label."
119 PRINT "When asked HOW MANY LABELS..., The answer
      you give will be the number of IDENTICAL labels
      you get."
129 PRINT "We suggest you print 2-3 more than you
      need for your jars, and use the extras as a
      record of your canning/pickling."
139 PRINT "If you print on gummed perforated stock,
      check how many lines the stock takes and make
      all labels 3 lines shorter."
149 PRINT "You can use ordinary paper and tape it to
      the jars with clear tape. This makes the jars
      easy to clean."
159 PRINT "Suggested information: Preserve, source
      of recipe, spicing variations, dates, number of
      jars produced, peculiarities of the crop (very
      ripe, green, hailspotted, &c.)"
200 INPUT "HOW MANY LABELS DO YOU WANT?";N
210 INPUT "HOW MANY LINES PER LABEL";L
220 FOR J=1 TO L
230 PRINT "ENTER TEXT FOR LINE # ";J
240 INPUT "MAXIMUM LENGTH 40 CHARACTERS";T$(J)
250 NEXT J
260 FOR I=1 TO N
270 FOR J=1 TO L
280 LPRINT T$(J)
      : NEXT
290 LPRINT
      : LPRINT"....."
      : LPRINT
300 NEXT I
400 INPUT "DO YOU WANT ANOTHER SET OF LABELS (Y/N)";
      X$
410 IF X$="Y" GOTO 200
1000 END
```

father, who knows a lot about computers, is also teaching me. I was always fascinated by statistics and large numbers. Using the few computer skills I have learned thus far, I wrote this program that I thought might come in handy. It tells you how many days you've been alive, how many meals you've eaten, how many days your family has been alive, and finally lists all the information. I hope you enjoy it.

```
5 CLS
10 PRINT"IMPORTANT INFORMATION"
20 PRINT"WHAT IS YOUR NAME?"
30 INPUT A$
40 PRINT"WELL "A$" HOW MANY YEARS HAVE YOU BEEN
      ALIVE?"
50 INPUT B
60 TTL=B*365
65 CLS
70 PRINT"WOW "A$" YOU'VE BEEN ALIVE "TTL" DAYS!"
80 PRINT"WOULD YOU LIKE TO TRY THE NEXT PART?"
90 INPUT C$
100 IF C$="YES" THEN 115 ELSE 2000
115 PRINT"TELL ME ONCE MORE "A$" HOW OLD ARE YOU?"
120 INPUT D
130 MEALS=D*3*365
135 CLS
140 PRINT"WELL "A$" KEEPING IN MIND THAT THE AVERAGE
      AMERICAN EATS ABOUT 3 MEALS DAILY, I'D SAY THAT
      YOU'VE EATEN ABOUT "MEALS" MEALS."
150 PRINT"WOULD YOU LIKE TO TRY THE NEXT PART?"
160 INPUT E$
170 IF E$="YES" THEN 180 ELSE 2000
175 CLS
180 PRINT"I CAN FIND OUT ABOUT HOW MANY DAYS YOUR
      FAMILY HAS BEEN ALIVE."
190 PRINT"HOW MANY PEOPLE ARE IN YOUR FAMILY?"
200 INPUT NUMBER
210 FOR COUNT = 1 TO NUMBER
220 PRINT"ENTER AGE OF FAMILY MEMBER"COUNT;
230 INPUT AGE(COUNT)
240 NEXT
250 FOR COUNT =1 TO NUMBER
260 DAYS = DAYS + AGE(COUNT)*365
270 NEXT
275 CLS
280 PRINT"YOUR FAMILY HAS LIVED "DAYS" TOTAL DAYS!"
290 PRINT"YOU HAVE CONCLUDED THE PROGRAM"
300 PRINT"LETS RUN OVER THE INFORMATION AGAIN"
310 PRINT"YOUR HAVE BEEN ALIVE "TTL" DAYS!"
320 PRINT"YOU HAVE EATEN ABOUT "MEALS" MEALS!"
330 PRINT"AND YOUR FAMILY HAS LIVED ABOUT "DAYS
      " TOTAL DAYS!"
2000 PRINT"THANK YOU FOR TALKING TO ME A BIT.
      GOODBYE!"
```

Notes On Previous Issues

MAY 1983

Radio Shack Dot-Addressable Printers

T-BUG
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On page 5 of the May 1983 issue appeared an article on Radio Shack Dot-Addressable Printers which contains three programs for use with "any DMP printer." I set up my DMP-2100 and proceeded to enter the programs.

Family Statistics

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I am eleven years old and am learning how to use a computer. I am enrolled in a computer class at school and my

To make the second program work correctly on my system, I had to correct line 90 to read:

```
90 DATA 124, -3, 2, -8, 113, -4, 98, 124, 120, 112,
888
```

To get the third program, which produces old English script, to work on Models II/12/16, line 2 should be changed to read:

```
2 PRINT@428, "One Moment Please...."
```

The DMP-2100 switches four and five must be ON to get the proper results. Also, set FORMS W=255. The program will not print a message longer than 22 characters.

If you want spaces ahead of the first character on a line, use a '['.

SEPTEMBER 1983

Clock

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On page 44 of the September 1983 issue of *TRS-80 Microcomputer News*, Paul Oberholtzer provided a formula to save memory with the GET and PUT statements. When I used this formula, I would occasionally get an FC error.

To correct this problem, I wrote this formula:

MODE	FORMULA FOR ARRAY
2 COLOR	INT((WIDTH+1)*(HEIGHT+2)/80):DIM A(X)
4 COLOR	INT((WIDTH+1)*(HEIGHT+1)/40):DIM A(X)

These formulas save about 38 times the memory needed. For example a 20 x 20 rectangle would need a DIM A(20,20) according to the Color BASIC book which is a total of 2000 memory bytes; using my formula you need to DIM A(11) which is only 55 memory bytes.

VisiCalc Commas

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The following program was inspired by the article by A. J. Bassett and G. Richards in the September, 1983 issue. When I ran their program, it did insert commas, but destroyed the integrity of my column heading, and in cases where a lot of commas were needed on a line, that line would "wrap around".

To cure this problem, I wrote the following program. It will keep the numbers under their original headings and will change "0" to "O" for easier reading.

Set the column width for the maximum width of the largest number, plus one space for each comma to be inserted, plus one additional space (for legibility). For example:

VC SHEET	NEW PRINT-OUT	MIN. COL. WIDTH
1000	1,000	6
10000	10,000	7
-10000	-10,000	8

When answering the prompt "Enter the name of the file you want printed at the end", you must include the /PRF extension or an error will occur.

Two flaws in this program are:

1. Commas may be inserted where you don't want them. For example, 1983 will print as 1,983. To prevent this, make sure there is only one leading blank.

2. If a string of numbers is more than 4 digits long, and a comma cannot be inserted, the error count will be inflated. For example, A123456 will generate three errors instead of one.

I found it faster to run this program and print its results by using the spooler, especially when I had to print more than one copy.

This program was run and tested on a Model II, 64K with a Line Printer V. To test this program, save a Visicalc sheet using the /PF, then from TRSDOS READY type "DO COMMAS".

```
10 ' this is COMMAS2
20 'by Joseph G. Miles -- September 29,1983
-- No rights reserved
30 CLS
40 INPUT "Do you want instructions";Z$
50 IF LEFT$(Z$,1)="Y" THEN 70 ELSE 250
60 '***** INSTRUCTIONS *****
70 PRINT
: PRINT "This program is designed to insert
commas and convert 0 to O in Visicalc (R)"
80 PRINT "sheet that was saved using the /PF
command. The saved file will have the /PRF
extension."
90 PRINT ""
: PRINT "The Visicalc sheet should have its
column width set for the maximum width"
100 PRINT "of the largest number, plus one space
for each comma to be inserted, plus"
110 PRINT "one additional space (for legibility).
For example: ':PRINT'"
120 PRINT" VC SHEET NEW PRINT-OUT MIN
IMUM COL. WIDTH (/GC#)"
130 PRINT" 1000 1,000 6"
140 PRINT" 10000 10,000 7"
150 PRINT" -10000 -10,000 8"
160 PRINT" 1000000.00 1,000,000.00 13"
170 PRINT
: PRINT
: PRINT "If the column widths are insufficient,
then the commas will only be"
180 PRINT "inserted where they will not disturb the
integrity of the column headings"
190 PRINT "and you will get an error message
following the print-out."
200 PRINT
: PRINT
: INPUT "Press <ENTER> when ready";Z$
210 '
220 '***** GET FILE *****
230 '
240 CLS
250 CLEAR 5000
: PRINT
260 INPUT "Do you want to print the error message
at the end ";S$
270 PRINT
280 INPUT "Enter the name of the file you want
printed ";F$
290 CLS
: PRINTF$;
300 '
310 '***** CHECK LENGTH OF PRINT LINE *****
320 '
330 FI$=F$
340 OPEN "I", 1, FI$
350 LINE INPUT#1,A$
360 LL=LEN(A$)+1
: character count +1 for carriage return
370 PRINT@400, "Line length is";LL-1; "characters."
380 CLOSE
390 '
400 '***** READ LINES OF PRINT FROM THE FILE *****
```

```

410 '
420 DIM P(LL+1)
    : DIM P$(LL+1)
430 OPEN "I", 1, FI$
440 E=0 'set error counter
450 IF EOF(1) THEN 910
460 FOR A=1 TO LL
470 P$(A)=INPUT$(1,1)
480 PRINT@A+79,P$(A);
    'display current line on screen
490 NEXT A
500 FOR X=1 TO LL
510 P(X)=ASC(P$(X))
    'convert characters to ASCII's
520 NEXT X
530 '
540 '**** READING BACKWARDS, CHECK 4 CHARACTERS
    TO SEE IF THEY ARE NUMBERS ****
550 '
560 FOR X=LL TO 4 STEP-1
570 IF P(X)>47 AND P(X)<58 THEN 580 ELSE 610
580 IF P(X-1)>47 AND P(X-1)<58 THEN 590 ELSE 610
590 IF P(X-2)>47 AND P(X-2)<58 THEN 600 ELSE 610
600 IF P(X-3)<47 OR P(X-3)>58 THEN 610 ELSE
    GOSUB 670 'go to comma insertion routine
610 IF P(X)=48 THEN 620 ELSE 630
620 P(X)=79 'convert 0 to O
630 NEXT X
640 GOTO 870 'go to print routine
650 '
660 '***** COMMA INSERTION *****
670 NX=X-3
680 W=0
690 FOR Y=NX TO 1 STEP-1
700 W=W+1
710 IF P(Y)=32 THEN 770 'check for blank
720 IF P(Y)=45 THEN 740 'check for negative sign
730 IF P(Y)>47 AND P(Y)<58 THEN 740
    'check for # between 0 and 9
740 NEXT Y
750 E=E+1
760 RETURN
770 IF P(Y-1)=32 THEN 800
780 E=E+1
790 RETURN
800 FOR Z=1 TO W
810 P(Y-2+Z)=P(Y-1+Z)
    'move leading numbers one position to the left
820 NEXT Z
830 P(NX)=44 'insert comma - CHR$(44)
840 RETURN
850 '
860 '***** PRINT ROUTINE *****
870 FOR X=1 TO LL
880 LPRINT CHR$(P(X));
890 NEXT X
900 IF EOF(1) THEN 910 ELSE 450
910 CLOSE
920 SYSTEM "T"
930 IF E=0 THEN 970
940 IF LEFT$(S$,1)="N" THEN 970
950 LPRINT "There were";E; "instances where commas
    were needed but could not be inserted."
960 SYSTEM "T"
970 PRINT@560, "Do you want to print ";FI$;
980 INPUT " again";Z$
990 IF LEFT$(Z$,1)="Y" THEN 430
1000 PRINT@720,"";
1010 INPUT "Do you want to print another report";Z$
1020 IF LEFT$(Z$,1)="Y" THEN 10
1030 CLS
    : SYSTEM

```

Model 100 File Lengths

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(Note Mr. Robinson's new address above. His notations on his submission arrived too late to alter the article before publication in December.)

There is an error in line 400 of the program. The address should be 1103 (not 1105). What I assumed to be the "end of files" pointer was the "beginning of .CO files" pointer. I had not seen a .CO file for the Model 100 at the time I sent the program.

At note of user caution: The program has been known to give erroneous lengths following closely after a "cold start" (total memory reset) because all of the operating systems pointers are not initialized until TEXT has been used or a BASIC program has been edited. The operating system could also contain an unacceptable pointer to the paste buffer before it is ever used.

I am providing a copy of the new version below which also shows how much memory has been reserved by the second parameter of BASIC's CLEAR command and how much memory has been reserved for file buffers by BASIC's MAXFILES command.

```

1 DEFINT A-Z
  : DEFSTR D-F
  : DIM F(23), A(23)
  : FOR X=-1408 TO -1639 STEP -11
  : IF PEEK(X) THEN FOR Z=0 TO 7
  : F(Y)=F(Y)+CHR$(PEEK(X+3+Z))
  : NEXT
  : GOSUB 8
2 NEXT
  : F(Y-1)="NonameBA"
  : F(Y-2)="Paste BF"
  : X=-1103
  : GOSUB 8
  : Y=Y-1
  : X=Y/2
3 FOR Z=0 TO Y-X
  : W=Z
4 IF A(W)>A(W+X) THEN B=A(W)
  : A(W)=A(W+X)
  : A(W+X)=B
  : E=F(W)
  : F(W)=F(W+X)
  : F(W+X)=E
  : W=W-X
  : IF W>-1 THEN 4
5 NEXT
  : X=X/2
  : IF X THEN 3 ELSE F(Y)="Reserved"
  : F(Y+1)="File BF"
  : A(Y+1)=A(Y)+MAXRAM-HIMEM
  : Y=Y+2
  : A(Y)=A(Y-1)+MAXFILES*267
  : Z=0
6 CLS
  : FOR W=Z TO 15+Z
  : PRINT@ (W-Z)*20, LEFT$(F(W),6)".
  RIGHT$(F(W),2);
  : PRINT USING "####";A(W+1)-A(W);
  : IF W+1=Y THEN W=98
7 NEXT
  : E=INPUT$(1)
  : Z=W
  : IF W=99 THEN MENU ELSE 6
8 A(Y)=PEEK(X+2)*256+PEEK(X+1)-65536
  : Y=Y+1
  : RETURN

```

DECEMBER 1983

Glossary

Access: The method in which information is read from or written to disk.

Acoustic Coupler: Generates audio tone frequencies identical to the electrical signals of a mode. The coupler accepts the handset of a telephone receiver into a pair of tightly-fitting rubber cups rather than a direct connection to the telephone line.

Address: A location in memory, usually specified as a two-byte hexadecimal number. The address range [0 to FFFF] is represented in decimal as [0 to 32767] [-32768, ..., -1].

Alphabetic: Referring to the letters A to Z and a to z.

Alphanumeric: Referring to the set of letters A to Z and the numerals 0-9.

Array: An organized set of elements which can be referenced in total or individually, using the array name and one or more subscripts. In BASIC, any variable name can be used to name an array; and arrays can have one or more dimensions. AR() signifies a one-dimensional array named AR; AR(,) signifies a two-dimensional array named AR; etc.

ASCII: American Standard Code for Information Interchange. This method of coding is used to store textual data. Numeric data is typically stored in a more compressed format.

Background Task: A job that the computer is doing that is not apparent to the user or does not require interaction with the user. Some examples are the REAL TIME CLOCK, the SPOOLer and the TRACE function.

Backup: A utility program used to make extra copies of disks as a safety measure in case the original disk is damaged.

BASIC: Beginner's All-purpose Symbolic Instruction Code; a programming language.

Baud: A term that refers to the rate of serial data transfer.

Binary: Having two possible states, e.g., the binary digits 0 to 1. The binary (base 2) numbering system uses sequences of zeroes and ones to represent quantities. This is analogous to the Computer's internal representation of data, using electrical values for 0 and 1.

Bit: Binary digit; the smallest unit of memory in the Computer, capable of representing the values 0 and 1.

Boot: The process of resetting a computer and loading the resident operating system.

Break: To interrupt execution of a program. In BASIC the statement STOP causes a break in execution, as does pressing the (BREAK) key.

Buffer: An area in RAM that will temporarily hold information that is being passed between devices or programs.

Byte: The unit that represents one character to the TRS-80. It is composed of eight binary "bits" that are either ON (1) or OFF (0). One byte can represent a number from 0 to 255.

Character: Any letter, symbol, or figure which is defined in

your particular computer system.

Compressed-Format: A method of storing information in less space than a standard ASCII representation would require. An integer typically requires two bytes; a single-precision number, four; a double-precision number, 8—regardless of how many characters are required to represent the numbers as text. String values are not stored in compressed format; each character requires one byte. BASIC programs in RAM are stored in compressed-format, with most BASIC keywords stored as special one-byte codes.

Concatenate: To add one variable or string onto the end of another.

CPU: Central Processing Unit; the primary unit of the computer.

CRT: (Cathode Ray Tube) is a television-like terminal.

Cursor: The location on the video display where the next character will be printed, usually marked by the presence of a cursor character.

Cylinder: All tracks of the same number on a disk drive. On single sided drives, cylinders will be synonymous with tracks.

Data: Information that is passed to or output from a program. Four types of data are:

- Integer numbers
- Single-precision numbers
- Double-precision numbers
- Character-string sequences (strings)

Database: Collection of information which is, in this case, stored on the computer.

Debug: To find and remove logical or syntactic errors from a program.

Decimal: Capable of assuming one of ten states, e.g., the decimal digits 0,1, ...,9. Decimal (base 10) numbering is the everyday system, using sequences of decimal digits.

Default: An action or value which is supplied by a program when you do not specify an action or value to be used.

Delete: A method of erasing data.

Delimiter: A character which marks the beginning or end of a data item, and is not a part of the data. For example, the double-quote symbol is a string delimiter to BASIC.

Density: Refers to the density of the data written to a disk. Double density provides approximately 80% more capacity than single density.

Destination Disk: The disk that information is being transferred to.

Device: A physical or logical part of the computer system used for data I/O, e.g., keyboard, display, or line printer.

Directory: A listing of program or system files. A cylinder on a disk used to store information about a disk's free and used space and file names.

Download: The process of transferring a file of data from

another computer or a database such as CompuServe to your own local computer system.

Disk: A magnetic recording medium for mass data storage.

Drive Number: A numeric value specifying one of the disk drives available on your system.

Driver: A machine language program used to control interactions between the operating system and a device.

Dummy Variable: A variable name which is used in an expression to meet syntactic requirements, but whose value is insignificant.

Edit: To change existing information.

Enter: Refers to data input that is concluded by pressing the **(ENTER)** key.

EOF: End of File, a marker used to denote the end of a program or data file.

File: An organized collection of related data. Under TRSDOS, a file is the largest block of information on a disk which can be addressed with a single command. BASIC programs and data are stored on disk in distinct files.

File Extension: An optional field in a file specification, consisting of the appropriate delimiter followed by the appropriate number of alphanumeric characters.

File Name: A required field in a file specification, usually consisting of one alphabetic character followed by up to 7 alphanumeric characters. File names are assigned when a file is created or renamed.

Filter: A machine language routine which monitors and/or alters I/O that passes through it.

Foreground Task: Jobs the computer does that are apparent to the user, such as running an applications program or a utility.

Format: 1) A method of telling the program the arrangement of data or fields. 2) A program that prepares disks to hold information.

Gran: An abbreviation used for the term GRANule. A GRAN is the minimum amount of storage used for a disk file. As files are extended, file allocation is increased in increments of GRANS. The size of a gran varies with the size and density of a disk.

Hardcopy: A printout of a screen or file.

Hexadecimal or Hex: Capable of existing in one of 16 possible states. For example, the hexadecimal digits are 0,1,2, . . . ,9,A,B,C,D,E,F. Hexadecimal (base-16) numbers are sequences of hexadecimal digits. Address and byte values are frequently given in hexadecimal form.

Increment: The value which is added to a counter each time one cycle of a repetitive procedure is completed.

Input: To transfer data from outside the Computer (from a cassette file, keyboard, etc.) into RAM.

I/O: The abbreviation for Input/Output.

Integer: A whole number or zero. Integers are numbers without decimal places.

Kill: A method of erasing information.

Kilobyte or K: Represents 1024 bytes of memory. Thus a 64K System includes $64 \times 1024 = 65536$ bytes of memory.

Library: A set of commands used to perform most operating system functions.

Logical Expression: An expression which is evaluated as either TRUE or FALSE.

Logoff: The sequence of events which disconnects you from another computer or database such as CompuServe.

Logon: The sequence of events which connects you with another computer or database such as CompuServe.

LSB: The Least Significant Byte in a hexadecimal word, sometimes referred to as the "low order byte".

Machine Language: An instruction set, usually specified in hexadecimal code. All higher-level languages must be translated into machine-language, or interpreted by machine language, in order to be executed by the Computer.

Master Disk: The main disk you are using during a Backup or Format process. The master disk for these processes is usually in Drive 0.

Menu: A listing of program options, usually accessed by a single keystroke.

Modem: A device used in transmitting computer signals. First, computer signals are MODulated into audio frequencies, then transmitted over the phone line, and finally these signals are DEModulated on the receiving end. Each character sent, either by typing on the keyboard or from a file set-up to transmit, is converted by the modulator into a coded series of pulses. When each end of the connection is equipped with a modem, both can modulate and demodulate the transmitted information, converting it back to computer-usable electronic pulses.

MSB: The Most Significant Byte in a hexadecimal word, sometimes referred to as the "high order byte".

Null String: A string which has a length of zero. For example, the assignment $A\$ = ""$ makes A\$ a null string.

Numeric: Characters that are numbers, decimal points or hyphens.

Octal: Capable of existing in one of eight states, for example, the octal digits are 0,1, . . . ,7. Octal (base-8) numbers are sequences of octal digits. Address and byte values are frequently given in octal form.

Output: To transfer data from inside the Computer's memory to some external area, e.g., a disk file or a line printer.

Pack I.D.: A disk's name and master password assigned during formatting.

Parameter: Information supplied with a command to specify how the command is to operate.

Password Protection: A method of securing your information so that only security-cleared persons (persons knowing the exact password) can gain access.

PATCH: A utility to make minor alterations to disk files.

Program: Set of instructions which a computer uses to perform a particular function.

Prompt: A character or message provided by a program to indicate that it's ready to accept keyboard input.

Random Access Memory or RAM: Semiconductor memory which can be addressed directly and either read or written to. The free user memory in the Computer unit.

Read Only Memory or ROM: Memory data that can be read by the computer but not altered by machine instructions.

Screen: The display shown on your video.

Search: The process of looking for data that meets predetermined criteria.

Sector: A contiguous block of disk storage where each byte within the sector has an absolute location and byte identification number. All sectors have a predefined, absolute starting and ending location.

Source Disk: The disk that information is being copied from.

Statement: A complete instruction in BASIC.

STOP/START Bits: Each character that can be transmitted by a computer or a terminal is identified by a unique pattern of zeroes and ones ("bits"). ASCII characters are further defined, for communications purposes, by additional bits that describe where each character in a stream of zeroes and ones starts and stops. Logically enough, these are called start and stop bits. The usual character transmission sequence is: 0 → start bit, 7 data bits, and one or two stop bits (depending upon the remote system).

String: Any sequence of characters which must be examined verbatim for meaning: in other words, the string does not correspond to a quantity. For example, the number 1234 represents the same quantity as $1000 + 234$, but the string "1234" does not. (String addition is actually concatenation, or stringing-together, so that: "1234" equals "1" + "2" + "3" + "4").

Switch: A parameter with a definite setting, such as ON/OFF.

Syntax: The "grammatical" requirements for a command or statement. Syntax generally refers to punctuation and ordering of elements within a statement.

Terminal: Keyboard and printing or display mechanism used to enter data into a computer and to display output from a computer. A microcomputer which is running terminal emulation software is considered to be a terminal.

TYPE: Used to describe data input that requires several keystrokes.

Update: A method of altering records to reflect changes in a record.

Upload: The process of transferring a file from your local computer system to another computer or database such as the CompuServe disk storage area.

Utility: A program that provides a service to the user. Utility programs usually run "outside" of the operating system itself.

Write-Protect: To protect a disk from being written to.

EDITOR'S NOTE: The terms in this glossary were selected from the glossaries of the following manuals-Model III Hard Disk Operating System, Model II Profile Plus, Model II Operating/BASIC Reference Manual, Model II Owner's Manual, and VideoTex Plus.

DiskMenu

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Here is a sample program written to help locate and run various programs on a given disk. Each system disk in my inventory contains a similar "DISKMENU" wherein I have altered the text of lines 140 through 200 and 400 through 460 (as needed) to display and RUN the programs on that disk. All other programs on the disk have been modified by substituting RUN "DISKMENU" in place of END so that upon execution of any program, the selection of available programs is again displayed.

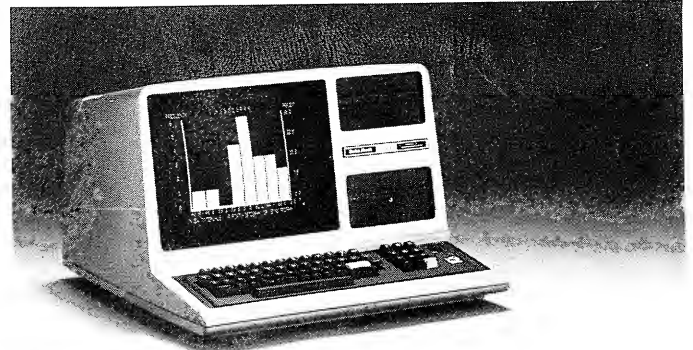
The two POKE statements in line 120 initialize the cursor and printer to suit my preference and equipment. It should be noted that the second may be eliminated in the absence of a printer, or modified according to size of paper being used.

Line 500 was added to this sample as brief instructions for modification when adding new programs to a disk.

Be sure to SAVE "DISKMENU" before RUNNING as the memory is cleared when loading new programs.

My wife is using our Model III much more as she no longer has to remember eight character abbreviated program names or the various statements and punctuations used to get a directory of a disk. All that is required is to insert any disk, type RUN "DISKMENU" and she has immediate access to all available programs.

```
100 REM *** DISKMENU ***
110 REM WRITTEN BY DALE L. ROHE FOR
    MODEL III, 48K, DUAL DISK SYSTEM
120 CLS
    : S=0
    : POKE 16412,1
    : POKE 16427,78
    : REM SET VARIABLES,
      SET CURSOR TO NONBLINK,
      SET PRINTER TO 80 CHR PER LINE
130 PRINT "The following programs are available
    on this disk;"
    : PRINT
140 PRINT "1. Checkbook Register, Balancer"
150 PRINT "2. Investment Portfolio"
160 PRINT "3. Income Tax Planner"
170 PRINT "4. Names, Addresses & Phone Numbers"
180 PRINT "5. Grocery Inventory & Shopping List"
190 PRINT "6. Meal Planner with Recipes"
200 PRINT "7. Dates to Remember"
295 REM *** INPUT SELECTION ***
300 PRINT
    : INPUT "Enter your selection by NUMBER";S
310 IF S<1 THEN CLS
    : PRINT S" is not offered. TRY AGAIN."
    : GOTO 130
320 IF S>7 THEN CLS
    : PRINT S" is not offered. TRY AGAIN."
    : GOTO 130
330 ON S GOTO 400, 410, 420, 430, 440, 450, 460
395 REM *** RUN SELECTION ***
400 RUN "CHECKBOOK/BS"
410 RUN "INVSIMTS/BS"
420 RUN "INCOMTAX/BS"
430 RUN "PHONEDIR/BS"
440 RUN "GROCINVT/BS"
450 RUN "MEALPLAN/BS"
460 RUN "REMINDER/BS"
500 REM *** WHEN NEW PROGRAMS ARE ADDED TO DISK,
    BE SURE TO MODIFY THE MENU FROM LINE 200,
    INCREASE UPPER LIMIT OF S (LINE 320),
    EXTEND LINE 330 &
    ADD NEW 'RUN' LINE FROM LINE 460
```



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